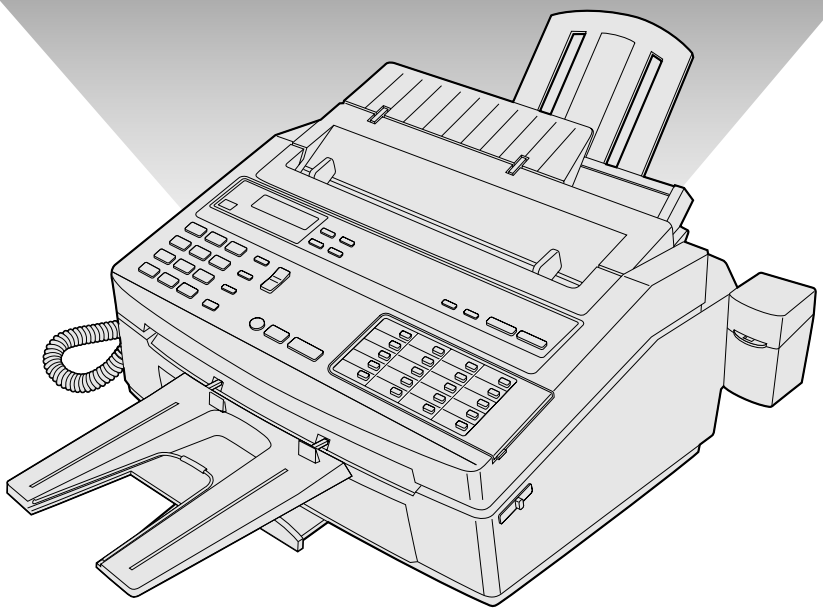
Panasonic

Plain Paper FAX

Model No. KX-F1600

OPERATING INSTRUCTIONS

FOR PRINTER



Please read these Operating Instructions before using the unit and save for future reference.

FOR OPERATION ASSISTANCE, CALL 1-800-HELP-FAX

- **This product is designed for use in the United States of America, and may not operate in other countries. (See page 62 for more details.)**
- Este producto ha sido diseñado para su uso en los Estados Unidos de América, y puede no funcionar correctamente en otros países. (Consulte la página 62 para tener más detalles.)

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Using the Unit with Windows®

Using the Unit with MS-DOS® Applications

Troubleshooting and Routine Care

Specifications

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Using these operating instructions

This guide contains the following.

Setting up the Unit for Printing
Describes how to set up the unit for printing.

Using the Unit with Windows
Describes how to install the KX-F1600 printer driver for Windows and how to print in a Windows environment.

Using the Unit with MS-DOS Applications
Describes how to print from the MS-DOS applications.

Troubleshooting and Routine Care
Describes how to solve problems which may be encountered when using as a printer.

Specifications
Describes the summary of printer and paper specifications.

Refer to the operating instructions for fax on the following information:
—Important safety instructions
—Limited warranty
—Service center directory
—Maintenance
—Print cartridge guideline

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Connecting the unit to a computer

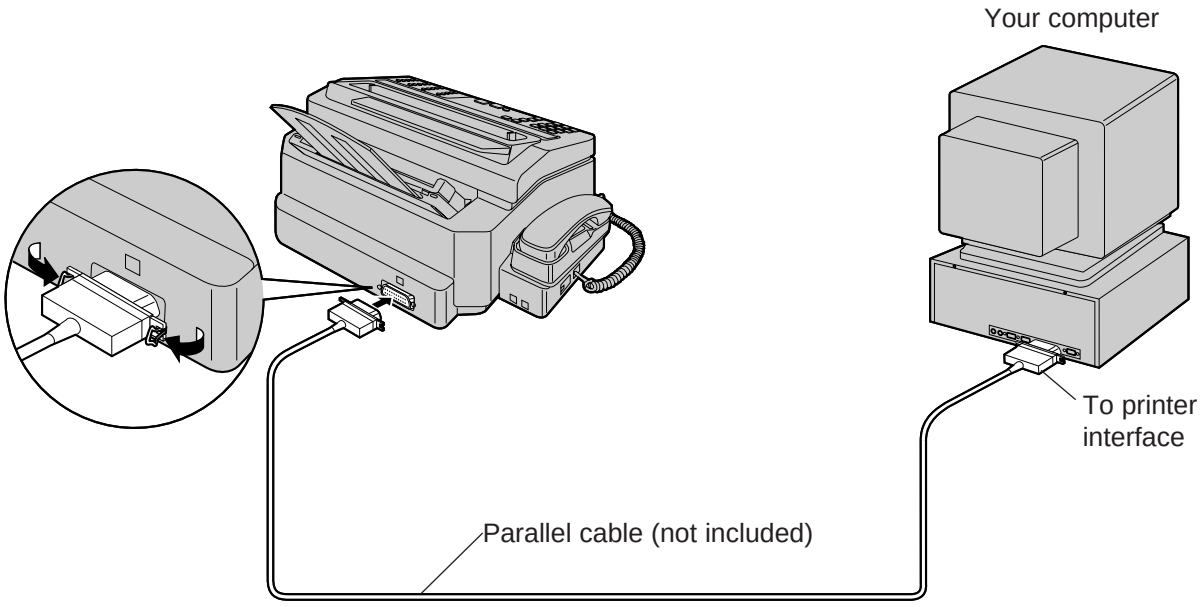
The unit has an 8-bit parallel interface jack, which allows you to use it with IBM PCs and compatible computers. You need to purchase a Centronics-compatible, parallel interface cable from your dealer.

Note:

- For reliable data communications and FCC Rules, use a shielded short parallel cable for printing, six feet or less in length.

1 Turn off the unit by disconnecting the power cord.
Also turn off the computer.

2 Connect the parallel cable.



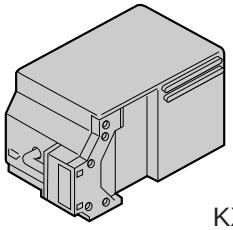
3 Turn the unit and the computer on.

For installing the print cartridge, power cord, stacker, tray, and other accessories, see the operating instructions for fax.

Selecting the print cartridge

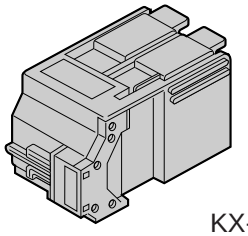
The print cartridges that can be used are:

■ **Included print cartridge or KX-FA150 Print Cartridge (option) for black and white printing**
Use this cartridge for printing draft and monochrome documents.
With this cartridge installed, your output prints twice as fast as when the color cartridge is installed and you can print documents with a higher resolution.



KX-FA150

■ **KX-FA151 Color Print Cartridge (option) for color printing:**
Use this cartridge when you print a document in color.



KX-FA151

For instructions on replacing the print cartridge, see page 55.

Note:
- When changing print cartridges, always store the cartridge you are not using in the print cartridge container.

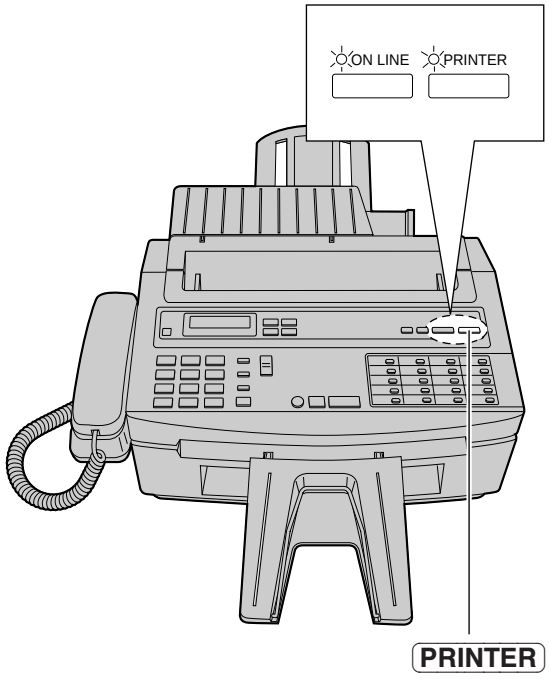
Turning the printer mode on/off

To use the unit as a printer, turn the printer mode on by pressing **PRINTER**.
- The PRINTER indicator will light and the display will show "PLEASE WAIT".
  After about forty seconds, the ON LINE indicator will light and the printer mode is turned on.

PLEASE WAIT	→	PRINTER ON

To turn the printer mode off:
Press **PRINTER** again.
- The PRINTER indicator will go out.

Note:
- When the printer mode is turned on, the unit stores a received fax document in memory and displays "WAITING PRINT". To print the stored document, turn the printer mode off.
- If you do not use the printer function for twenty minutes in the printer mode, the unit will automatically print the stored document.



Before loading paper

Selecting the print media

You can print on the following print media.

Ink Jet Paper: This paper is specially developed for color printing with ink jet printers. Canon Bubble Jet Paper LC-301 for BJC-4100 is recommended. Only letter size is available.

Color Ink Jet Paper: This paper is specially designed for ink jet printers. The unit will produce sharp and vivid color output on this high-grade matte paper. Canon Coated Paper LC-101 for BJC-4100 is recommended. Letter and legal sizes are available.

Plain Paper: You can use regular copier paper, cotton bond papers, and typical letterhead. The output quality on plain paper can vary depending on the quality of the paper used.

Ink Jet Transparencies: These clear overhead transparencies (also called Over Head Projection or OHP film) are specially designed for ink jet printers. Other transparencies may cause problems in your unit by either not feeding correctly or not allowing the ink to dry properly. Use these transparencies to produce crisp, professional overhead presentations. Canon Transparencies CF-102 for BJC-4100 is recommended. Only letter size is available.

Ink Jet Glossy Paper: The paper is specially designed to achieve the highest possible color fidelity and print quality. Canon Glossy Paper GP-101 for BJC-4100 is recommended. Only letter size is available.

Resume Paper: (Fabric Sheets) These Canon Fabric Sheets FS-101 are specially designed for ink jet printers. You can create your own cross stitch designs, pillows, holiday stockings, and other imaginative craft and sewing projects. Legal size is available.

Ink Jet Back Print Film: This unique glossy paper allows you to print high quality color output such as photographic images and graphics. These outputs are capable of being viewed either by rear illumination, such as a light box, or as regular prints. Back print film is a mylar-based translucent sheet. When viewed by a light box, back print film provides a sharp, bright, and vivid presentation of special items such as photographs, portraits, and graphics. Canon Back Print Film BF-102 for BJC-4100 is recommended. Only letter size is available.

Envelope: Commercial number 10 or Envelope DL is recommended.

Note:

- For more details on paper specifications, see page 59.

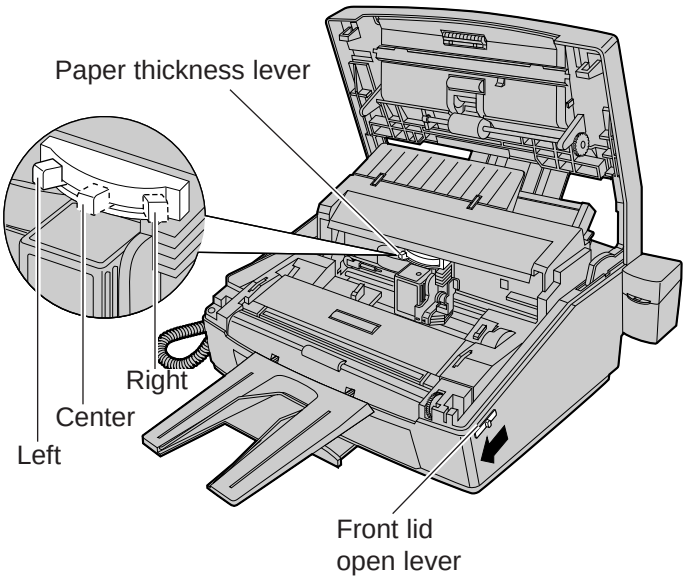
Setting the paper thickness lever

Use the paper thickness lever to adjust the distance between the print head and the paper to accommodate different paper thicknesses.

1 Slide the front lid open lever towards you to open the front lid.

2 Set the paper thickness lever to the correct position.

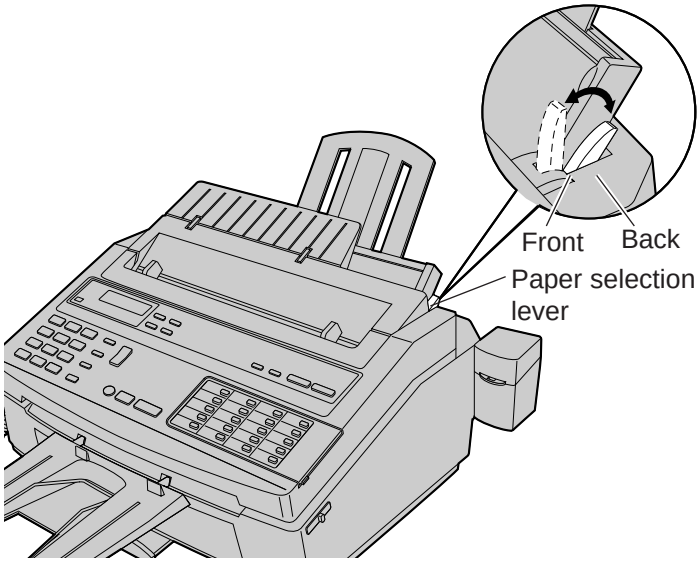
- For printing on ink jet paper or plain paper using a black print cartridge, set to the **left** position.
- For printing on any type of paper using the color print cartridge, or printing on color ink jet paper, ink jet glossy paper, ink jet transparencies, or ink jet back print film, set to the **center** position.
- For printing on thick paper or envelopes, set to the **right** position.



Setting the paper selection lever

You must set the paper selection lever according to the paper you use.
Be sure to remove any paper from the paper tray before setting the paper selection lever.

- For ink jet paper, plain paper, color ink jet paper, ink jet transparencies, or ink jet back print films, set this lever to the **back** position .
- For envelopes, ink jet glossy paper, thick paper, and manual feed, set this lever to the **front** position.



Note:

- Do not move this lever after loading paper in the paper tray.
- This lever is different from a lever on a typewriter or dot matrix printer. You need not pull it forward to load paper.

Loading paper

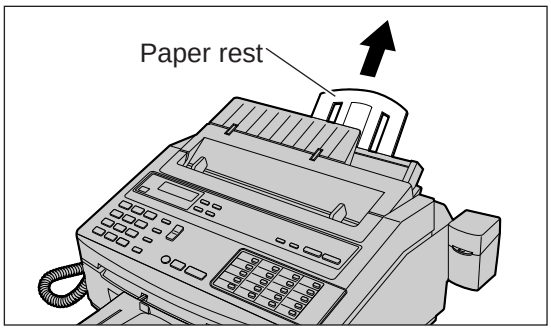
There are two paper feed procedures: automatic sheet feed and manual feed.

Using automatic sheet feed

Use this procedure for ink jet paper, ink jet transparencies and other media other than thick paper or resume paper. You can stack about 100 sheets of plain paper (20 lb or 95 g/m^2) in the paper tray.

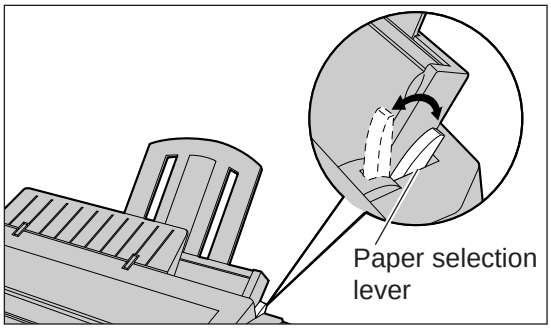
1 Pull the paper rest up until it stops.

- Unless the paper rest is pulled up, a paper jam or multiple sheet feeding may occur.



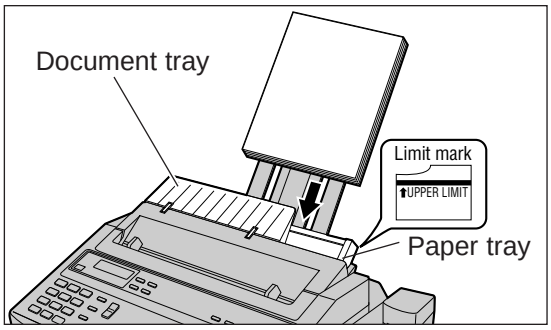
2 Set the paper selection lever to the correct position.

- For ink jet paper, color ink jet paper, plain paper, ink jet transparencies, or ink jet back print films, set to the **back** position.
- For ink jet glossy paper, set to the **front** position.

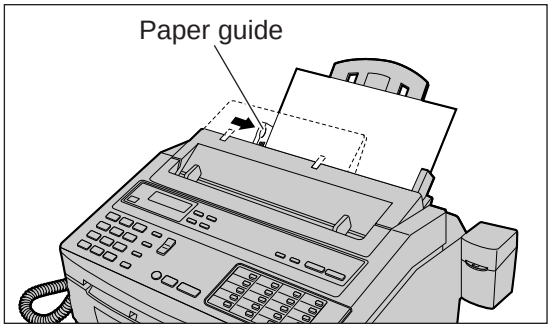


3 Fan the paper and slide it into the paper tray.

- Align the edge of the paper with the right edge of the paper tray.
- The height of the paper should not exceed the limit mark on the paper tray.
- If you have difficulty in sliding the paper, tilt the document tray towards you then slide the paper into the paper tray.



4 Adjust the paper guide.



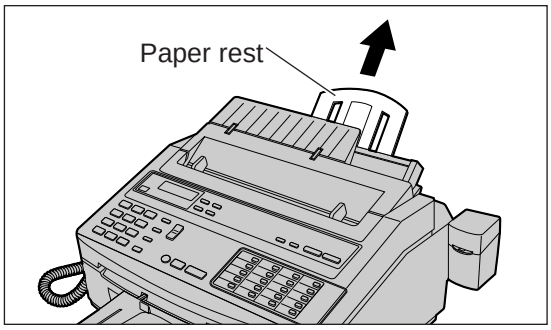
Note:
- Do not insert paper of different thickness in the paper tray at same time. This may cause a paper jam.
- Avoid extremely smooth or shiny paper that is highly textured. Also avoid coated, damaged, or wrinkled paper and paper with a cotton and/or fiber content that is over 20%.
- Avoid used paper for double-sided printing.
- Do not use paper printed with this unit for double-sided printing with other copiers or printers, or a paper jam may occur.

Note for loading transparencies:
- Do not touch the printing area with your fingers. When you touch the film, the ink will smear.
- When automatically feeding transparencies, remove each sheet after it is output. Otherwise the sheets may stick together.

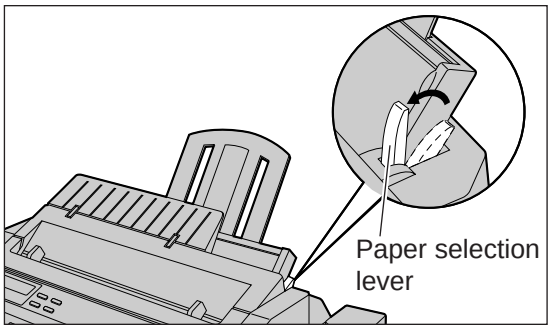
Using manual feed

Use this procedure for thick paper (24 lb to 28 lb or 91 g/m^2 to 105 g/m^2) or resume paper.

1 Pull the paper rest up until it stops.

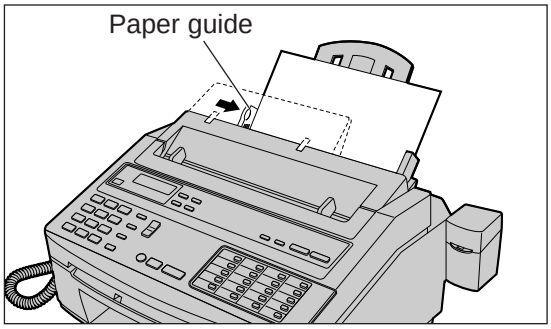


2 Set the paper selection lever to the front position.



3 Insert a single sheet of paper into the paper tray.

- Align the sheet with the right edge of the paper tray.
- Adjust the paper guide.



Note:
- If you print from a Windows application, you must select Manual Feed in the printer driver.

Loading envelope

You can stack up to 15 envelopes in the sheet feeder or you can manually feed envelopes one at a time. U.S. Commercial number 10 envelopes and Envelope DL envelopes are recommended.

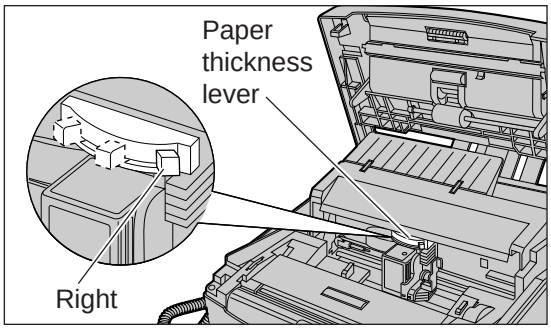
Important:

- The following envelopes are not recommended because they may cause jams or smears, or may damage your unit.
  - —Envelopes with windows, holes, perforations, cutouts, and double flaps.
  - —Envelopes made with special coated paper or deeply embossed paper.
  - —Envelopes using peel-off sealing strips.
  - —Envelopes in which letters have been enclosed.

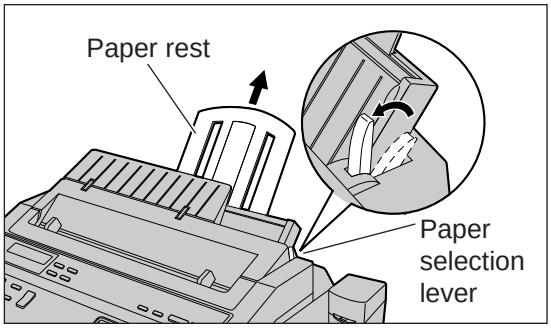
Loading commercial #10 envelope

To load a commercial number 10 or a envelope that is longer than 8¾ inch (222 mm) in width, you must use the manual feed and proceed as follows.

1 Make sure the paper thickness lever is set to the right.

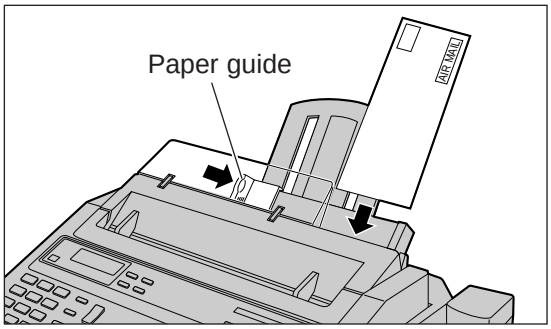


2 Set the paper selection lever to the front and pull the paper rest up until it stops.



3 Insert a envelope printing side up.

- The envelope must be loaded with the shorter side first to avoid a paper jam.
- Adjust the paper guide.



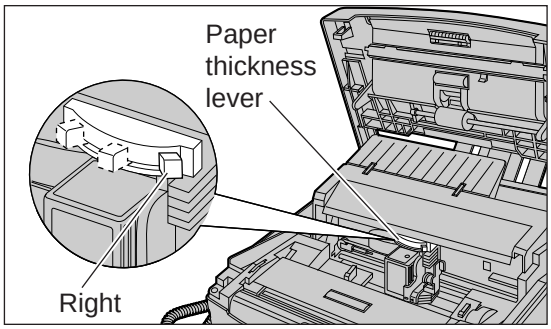
Note:

- If you are using the KX-F1600 printer driver, make sure the Orientation setting is set to landscape in Main dialog. For details, see page 19.

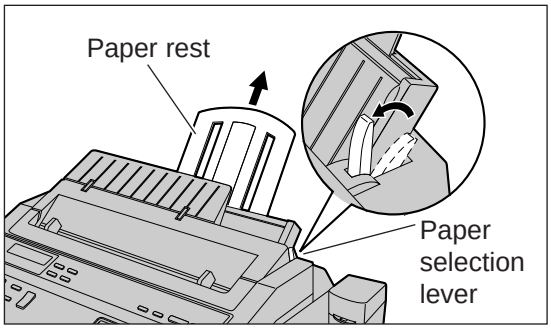
Loading Envelope DL envelopes

When you use Envelope DL or envelopes that are shorter than 8¾ inch (222 mm) in width, you can load up to 15 envelopes at a time and use the automatic sheet feeding.

1 Set the paper thickness lever to the right.

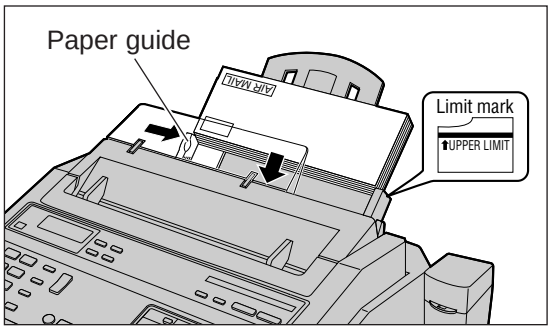


2 Pull up the paper rest and set the paper selection lever to the front.



3 Insert the envelopes (up to 15 envelopes) printing side up.

- Align the edge of the envelopes with the right edge of the paper tray.
- Adjust the paper guide.
- The height of the envelopes should not exceed the limit mark.



Using the envelope mode

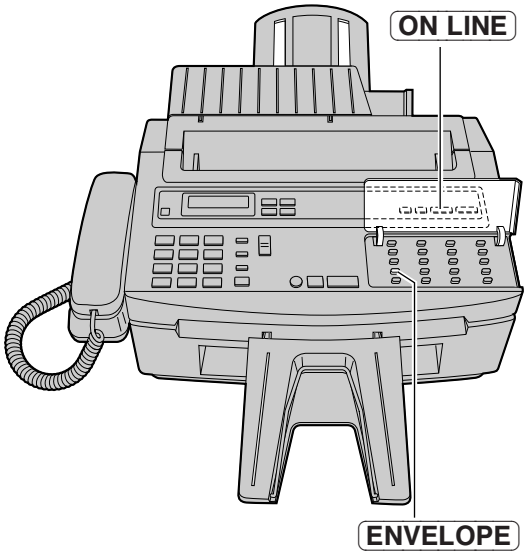
If you are not using Windows and your software application does not have an envelope feature, you can turn on the unit's envelope mode using the ENVELOPE button.

1. Make sure the unit is on-line.

2. Open the station key panel and press **ENVELOPE**. The display will show:

```
ENVELOPE MODE
```

3. Press **ON LINE** to set the unit on-line.

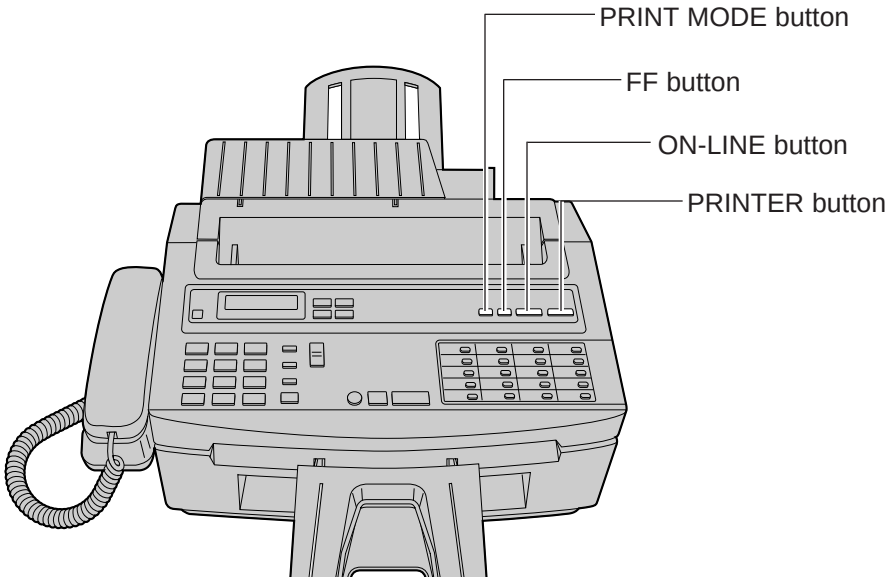


To turn the envelope mode off:

1. Open the station key panel and press **ENVELOPE** when the unit is on-line.

2. Press **ON LINE** to set the unit back on-line.

Using buttons for printer



PRINT MODE button

Use this button to select the print mode with MS-DOS applications. For details, see page 35.
If you are using Windows, the printer driver automatically selects the print mode.

FF button

Use this button to load a new sheet of paper or eject a sheet of paper from the unit.

Form feeding

To load the first sheet of paper to print position, follow these steps:

1. The unit must be off-line.
2. Stack the paper properly in the sheet feeder.
3. Press **FF** to load the first sheet of paper to its print position.

Ejecting paper

When you want to eject a sheet of paper, follow these steps.

1. The unit must be off-line.
2. Press **FF**.

ON-LINE button

Use this button to set the unit on and off-line or to pause a print operation.

Setting the unit on and off-line

1. To set the unit on-line, press **ON LINE**.
   - The ON LINE indicator will light when the unit is on-line.
2. To set the unit off-line, press **ON LINE** again.
   - The ON LINE indicator will go out when the unit is off-line.

Pausing a printer operation

When you are printing a document and you want to pause the unit:

1. To pause printing, press **ON LINE**.
   - The ON LINE indicator will go out, the unit will stop printing and go off-line.
2. To start printing again, press **ON LINE**.
3. If data is in the print buffer, the ON LINE indicator will blink.
   - To print the data, press **ON LINE** to set the unit off-line and then press **FF**.

PRINTER button

Use this button to turn the printer mode on/off.
For details, see page 7.

Installing the printer driver for Windows

Before you can print documents from Windows applications, you must install the appropriate printer driver in your computer.

The printer driver takes the information from your application program and translates it into a language the unit can understand.

The driver requires the following operating parameters to be in your computer.
—Minimum 4 MB recommended RAM
—MS-DOS 4.0 and above
—Microsoft Windows 3.1 or 3.11 or Microsoft Windows 95

Installing the printer driver for Windows 3.1 or 3.11

1 Initialize the computer using Windows 3.1 or 3.11.

2 Insert the diskette (provided) into disk drive A (or B).

3 From the Program Manager, click **File**. Then click the **Run...** option.

4 Type **a:** (or b:)**\install** in the Filename field of the Run dialog, then click **OK**.
- You may have to select the desired language.
- The INSTALLATION dialog box will appear.

5 Select printer model, then click **OK**.

6 Follow the instructions on the screen to complete the installation.

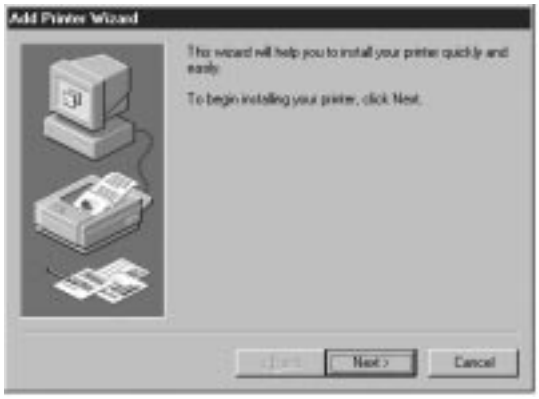
Installing the printer driver for Windows 95

1 Initialize the computer using Windows 95.

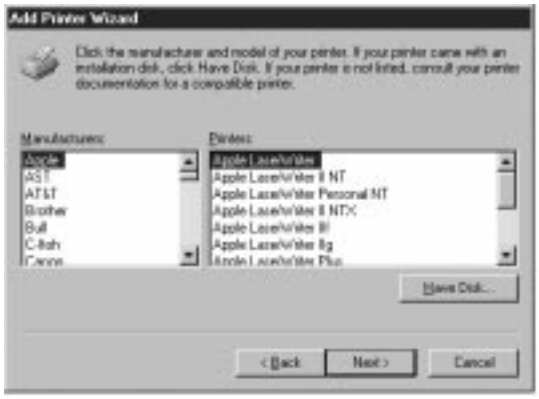
2 Insert the diskette (provided) into disk driver A (or B).

3 Click **Start**, move the pointer to **Settings** and click **Printers**.

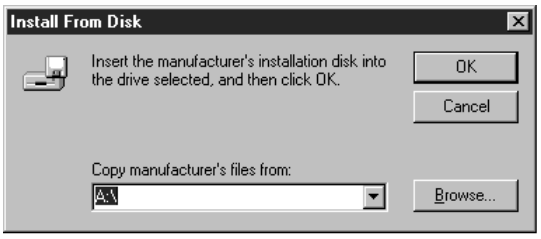
4 Double click the **Add Printer** icon.
- "Add Printer Wizard" window will be displayed.



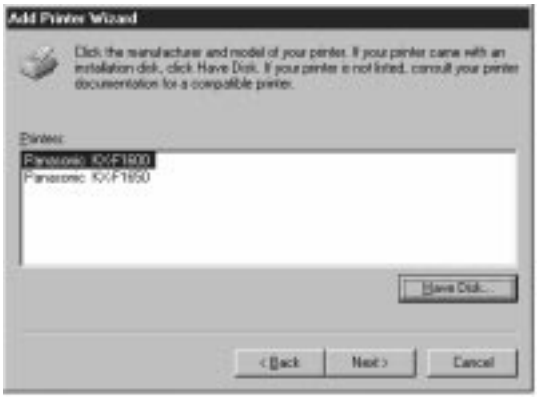
5 Click **Next>**.


Add Printer Wizard
Click the manufacturer and model of your printer. If your printer came with an installation disk, click Have Disk. If your printer is not listed, consult your printer documentation for a compatible printer.
Manufacturers:
Printers:
Have Disk...
< Back
Next >
Cancel

6 Click **Have Disk...**.
- "Install From Disk" window will be displayed.



7 Select the disk drive, then click **OK**.


Add Printer Wizard
Click the manufacturer and model of your printer. If your printer came with an installation disk, click Have Disk. If your printer is not listed, consult your printer documentation for a compatible printer.
Printers:
Panasonic KX-F1600
Panasonic KX-F1650
Have Disk...
< Back
Next >
Cancel

8 Select printer model, then click **Next>**.

9 Click **Next>**.

10 Click **Finish**.
- You may have to select the desired language.
- The "Installation" window will appear.
- Follow the instructions on the screen to complete the installation.

Setting as the default printer

After installing the printer driver for Windows 95, set the unit as the default printer by the following procedures.

1 Click **Start**, move the pointer to **Settings** and click **Printers**.

2 Click the "Panasonic KX-F1600" Printer icon.

3 Click **File** and click **Set As Default**.

Printing documents from Windows applications

Printing documents in black and white

When printing a document using Microsoft Word, proceed as follows.

1 Start the application software in the Windows environment.

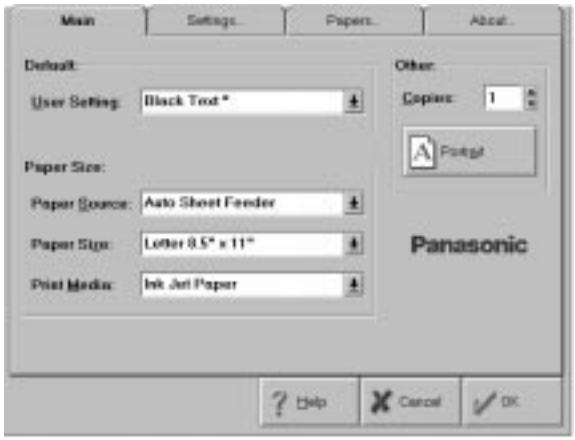
2 Open the document you want to print.

3 Click **Print...** in File menu of the application software.

4 **For Microsoft Word 6.0 with Windows 3.1:**
Click **Printer...**, then click **Options..**.

For Microsoft Word 7.0 with Windows 95:
Click **Properties**.

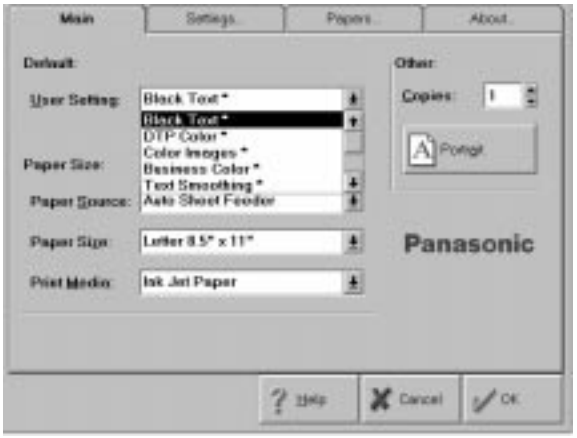
- Windows will display the printer dialog box.



5 From this screen, select printer options.

- For black and white printing, click on the arrow in the User Setting box and select one of the following from the drop-down list:

Black Text:	For normal quality printing.
Text Smoothing:	For high quality printing.
Grayscale Images:	For printing images like scanned photos or bitmaps.



- For details on printer options, see pages 19 to 26.

6 After selecting the options you want, click **OK** to close the driver dialog box.

7 **For Microsoft Word 6.0 with Windows 3.1:**
Click **Close**, click **OK** to start printing.

For Microsoft Word 7.0 with Windows 95:
Click **OK** to start printing.

Note:

- The printing procedures are different depending on the software you are using. For details, refer to the software manual.
- If the printed document is unclear or blank, the print cartridge may have run out of ink. Clean the print head at least five times (see page 58). If the output is still blank, replace the print cartridge with a new one (see page 55).

Printing documents in color

When printing a document using Microsoft Word, proceed as follows.

1 Make sure the KX-FA151 color print cartridge is installed and the paper thickness lever is set to the center.

2 Start the application software in the Windows environment.

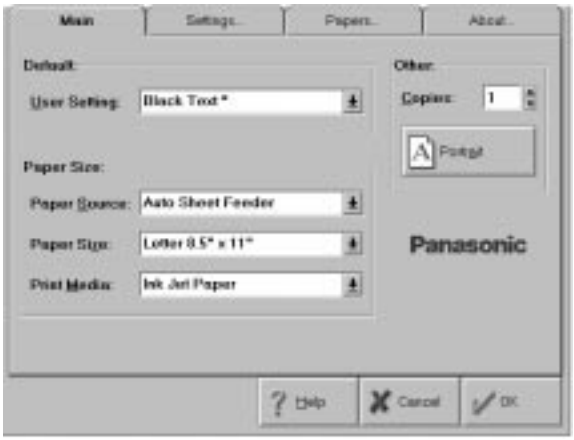
3 Open the document you want to print.

4 Click **Print...** in File menu of the application software.

5 **For Microsoft Word 6.0 with Windows 3.1:**
Click **Printer...**, then click **Options..**.

For Microsoft Word 7.0 with Windows 95:
Click **Properties**.

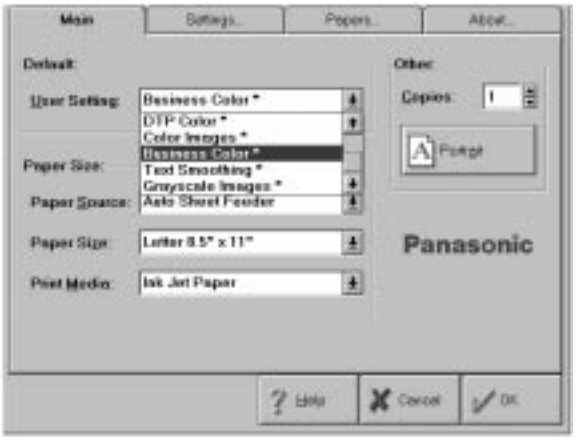
- Windows will display the printer dialog box.



6 From this screen select printer options.

- For color printing, click on the arrow in the User Setting box and select one of the following from the drop-down list:

Business Color:	For normal quality printing.
DTP Color:	For printing colored images like charts, diagrams, or graphics.
Color Images:	For printing colored images like scanned photos or bitmaps.



- For details on printer options, see pages 19 to 26.

7 After selecting the options you want, click **OK** to close the driver dialog box.

8 **For Microsoft Word 6.0 with Windows 3.1:**
Click **Close**, click **OK** to start printing.

For Microsoft Word 7.0 with Windows 95:
Click **OK** to start printing.

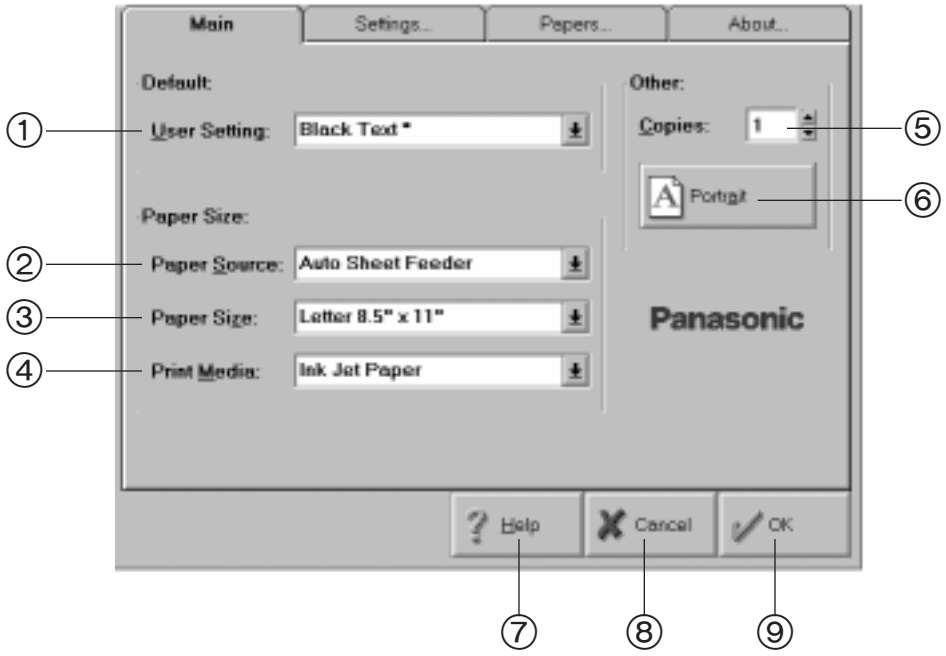
Note:

- The printing procedures are different depending on the software you are using. For details, refer to the software manual.
- If the selected colors do not appear on the output, an ink cartridge may have run out of ink. Clean the print head at least five times (see page 58). If the output is still unsatisfactory, replace the ink cartridge with a new one (see page 57).

Setting up the printer driver

Selecting printer options in Main dialog

The Main dialog contains the most important control for the printer drivers.



① User Setting option

Use this option to select one of the defined processing settings of the driver. In this way, you can restore a special setting you need just by selecting a User Setting.

Click on the arrow in the User Setting box and select one of the following:

Black Text *: Used for day-to-day printing in monochrome.
This setting uses Normal Quality and Detailed Graphics halftoning.

DTP Color *: Used for images or graphics (like charts or diagrams) in color.
It uses High Quality and Automatic halftoning.

Color Images *: Used for images (like scanned photos or bitmaps) in color.
This setting uses Excellent Quality and Photo halftoning.

Business Color *: Used for day-to-day printing in color.
It uses Normal Quality and Detailed Graphics halftoning.

Text Smoothing *: Used for high quality text in monochrome.
This setting uses High Quality (Smoothing) and Detailed Graphics halftoning.

Grayscale Images *: Used for images (like scanned photos or bitmaps) in monochrome.
This setting uses Excellent Quality and Photo halftoning.

Note:

- Use the “Settings...” tab to change the possible adjustments in each mode, like Print Quality, Color, Halftone, or Intensity Control. For details, see page 22.

② Paper Source option

This setting defines how paper (or other print media, such as ink jet transparencies) will be fed into the unit.

Click on the arrow next to the Paper Source setting and select one of the following:

Auto Sheet Feeder: Used for ink jet paper, envelopes (Envelope DL), ink jet transparencies and other media other than thick paper or resume paper.

Manual Feed: Used for thick paper, resume paper or envelopes (Commercial #10). The Manual Feed setting requires that the media is fed into the unit, by hand, one sheet at a time. The Print Manager icon or caption bar will blink and prompt you to insert a sheet of paper. The unit beeps, when no paper is inserted. To solve this error, press **ON LINE** and insert a sheet of paper into the unit.

③ Paper Size option

Specify the size of the paper in the unit.

Click on the arrow next to the Paper Size setting and select one of the following:

A4 210×297 mm
A5 148×210 mm
B5 182×257 mm
Commercial-10
Envelope DL
Legal 8.5″×14″
Letter 8.5″×11″

Note:
- If this box does not contain the paper size you want to use, you can define your own using the 'Papers...' tab (see page 25).

④ Print Media option

This setting is used to define the type of print media that is loaded in the unit. This setting is important for controlling the quality of the final printed image. Selecting the correct Print Media setting is essential for producing high-quality printed images.

Click on the arrow next to the Print Media setting and select one of the following:

Ink Jet Paper:
Paper selection lever: Set to the **back** position.
Paper thickness lever: Set to the **left** position if using the black print cartridge or to the **center** position if using the color print cartridge.

Color Ink Jet Paper:
Paper selection lever: Set to the **back** position.
Paper thickness lever: Set to the **center** position.

Plain Paper:
Compared to the Ink Jet Paper setting, less ink is applied to avoid blurring.
Paper selection lever: Set to the **back** position.
Paper thickness lever: Set to the **left** position if using the black print cartridge or to the **center** position if using the color print cartridge.
The output quality on plain paper can vary depending on the quality of the plain paper used.

Ink Jet Transparency: Used for transparency film (such as that used in overhead projectors).
Paper selection lever: Set to the **back** position.
Paper thickness lever: Set to the **center** position.

Ink Jet Glossy Paper: Paper selection lever: Set to the **front** position.
Paper thickness lever: Set to the **center** position.

Resume Paper: Paper Source setting: Set to **Manual Feed**.
Paper selection lever: Set to the **front** position.
Paper thickness lever: Set to the **right** position.

Ink Jet Back Print Film: Used for media on which the output is printed on the back side of the paper. The printout will be mirrored by the driver.
Paper selection lever: Set to the **back** position.
Paper thickness lever: Set to the **center** position.

Envelope: Paper selection lever: Set to the **front** position.
Paper thickness lever: Set to the **right** position.

Other Paper: Used for media other than those mentioned above.
Paper selection lever: Set to the **front** position.
Paper thickness lever: Set to the **right** position.

⑤ Copies option

Enter the number of copies (up to 99) to be printed.

Important:
- In general, setting the number of copies in the printer setup dialog box will produce faster uncollated copies. Setting the number of copies in your application will slow down printing, but the copies will be collated.

⑥ Orientation option

Click the Select button to select the print orientation:

Portrait: Text is printed across the shorter dimension of the paper.

Landscape: Text is printed lengthwise across the longer dimension of the paper.

⑦ Help button

Press this button to obtain Windows Help on how to use the printer driver.

⑧ Cancel button

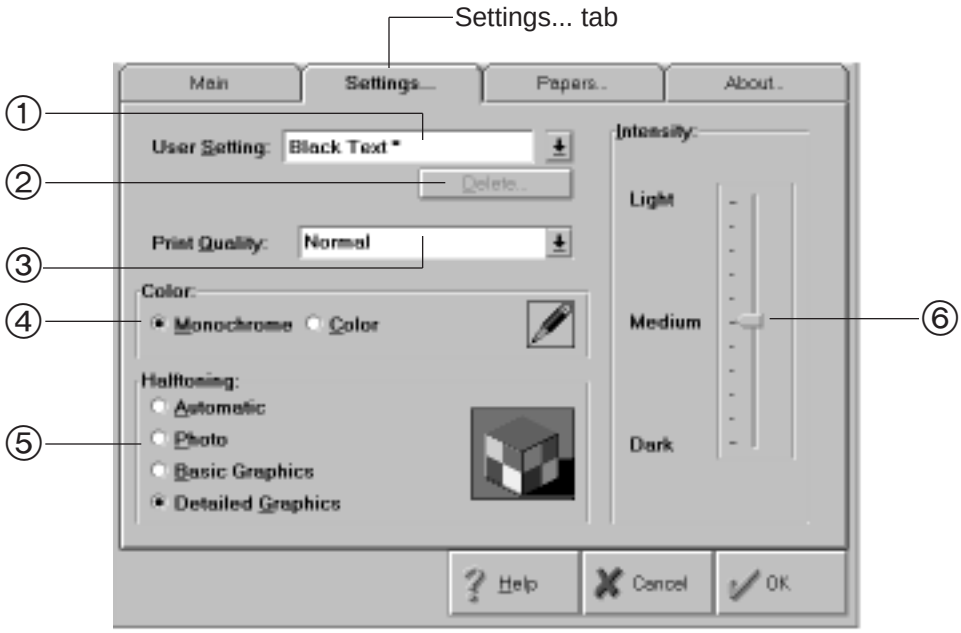
When you press this button, you will close the current windows. Any changes you have made will be lost.

⑨ OK button

Press this button to close the current windows. All your changes will be saved.

Using Settings... dialog

The “Settings...” dialog allows you to adjust and save all quality selections, color modes and halftone settings of the driver under a specific name. In this way, you can restore a special setting you need by selecting another User Setting in the Main window.
Click on the **Settings...** tab to display the following window.



① Customizing user setting

When you change an adjustment, like Print Quality, Color, Halftone, or Intensity Control, the User Setting item changes to ‘User Defined’. If you need to use this setting again, save it by simply typing over the words ‘User Defined’ with a new name of your choice.

1 Make your changes to Print Quality, Color, Halftoning, or Intensity Control.
- The User Setting item changes to ‘User Defined’.

2 Type over the words ‘User Defined’ with a new name of your choice.

Important:
- When you put a ‘*’ at the end of the name, you are defining a permanent User Setting, which cannot be deleted. The predefined settings have a ‘*’ at the end and may not be deleted.

② Removing defined user settings

1 Select the User Setting you want to delete.

2 Click **Delete**.

- The User Setting will be removed from the list. User Settings with a ‘*’ at the end cannot be removed, even if they are user-defined.

③ Print Quality option

The Print Quality settings are used to define the overall quality of the document printed by the unit.

Click on the arrow next to the Print Quality setting and select one of the following:

Excellent Quality: Used for printing ink jet transparencies, ink jet back print film, and other high quality print media. It prints with 360×360 dpi in color and monochrome.

High Quality (HQ): This print quality produces better, but slower output than Normal print quality. It prints with 360×360 dpi in color.

High Quality (Smoothing): This print quality produces better, but slower output than Normal print quality. It prints with 720×360 dpi in monochrome using smoothing technology. Smoothing means that extra pixels are printed to round off “jaggies”, which may appear in text characters.

Normal: This print quality is the best choice for everyday use. It prints with 360×360 dpi in color and monochrome. This is the default print quality.

Draft Quality: Used for quickly printing draft documents. It prints with 180×180 dpi in color and monochrome, and uses less ink than the other print qualities.

④ Color option

The Color setting defines how colors are interpreted and printed by the unit.

Select one of the following:

Color: Used for printing in full color (up to 24-bit per pixel capability).

Monochrome: Used for printing text in black and white, and graphic images in grayscale. Full-color images will be translated and printed in shades of gray. The Grayscale setting will result in a faster printing speed than the color setting and is useful for printing draft copies of color files. Each pixel is represented by 8 bits of data representing a level of gray from 0 to 255.

⑤ Halftoning option

The Halftone setting defines how mixing of colors is performed and printed by the unit. The unit contains four colors of ink: cyan, magenta, yellow, and black. Intermediate colors can be created by mixing combinations of these inks. To print the entire spectrum of color, the Windows Driver applies special halftone methods, where different colored dots of ink are placed closely together to create the illusion of other colors.

Select one of the following:

Automatic: This method automatically identifies which setting is best suited for the current printout. It even combines different Halftone settings within a page. 'Photo' will be used for photographs or pictures while 'Detailed Graphics' will be used for accurate text printing. Setting the driver to 'Automatic' also fulfills the special requirements for printing documents that contain large areas of solid color, such as bar charts and graphs.

Photo: This method represents different intensities of colors by using random pixels with distributed errors. It lets you obtain printouts of 16.7 million different colors or 256 shades of gray using only four different ink colors. Unlike Detailed Graphics, no regular patterns are visible. Use this method for printing scanned images or bitmaps with the highest halftoning quality possible.

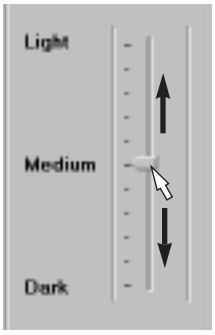
Basic Graphics: This method represents different intensities of colors by using a pattern of variable size dots. This technique is similar to the method of how images in newspapers are rastered. Use this method for printing scanned images or bitmap printing. When your printout will be photocopied, this method produces the best results.

Detailed Graphics: This method uses the standard Windows dithering patterns.

⑥ Intensity setting

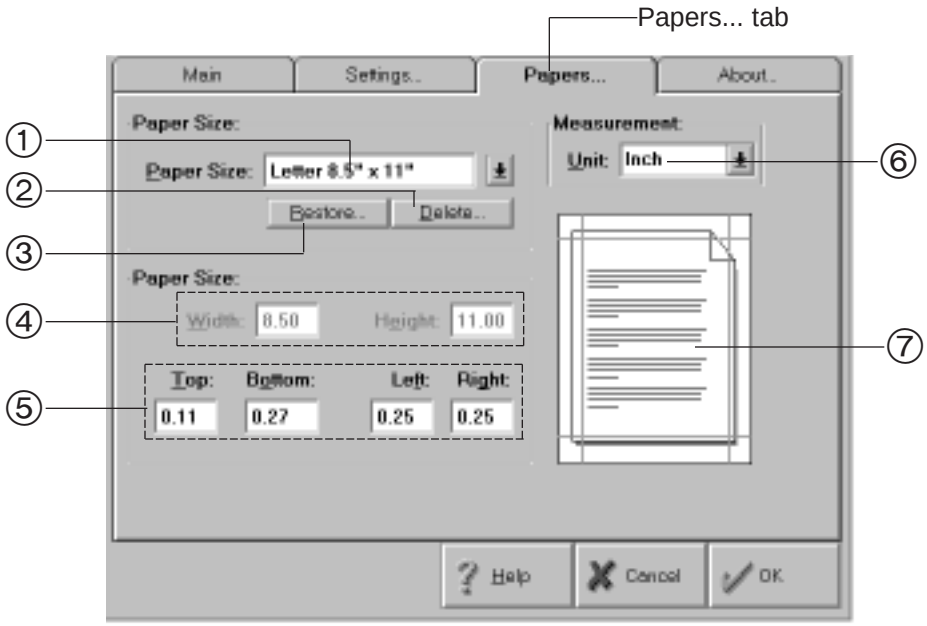
This setting adjusts the difference in blackness between two adjoining areas of gray. Use this setting to change gradients in pictures or images.
To adjust the setting:

1. Align the arrow with the Intensity button.
2. Click and hold the left side of the mouse.
3. To lighten the Colors, move to the upper.
4. To darken, move to the lower.



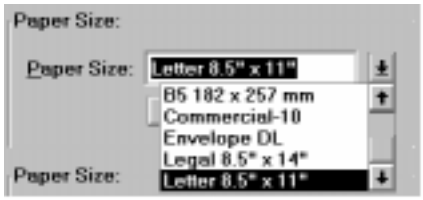
Using Papers... dialog

This window allows you to define and save your own paper sizes and make them available to the unit and your applications.
Click on the **Papers...** tab to display the following window.



① Define a new Paper Size

To define a new paper size, proceed as follows.



1 Click on the arrow next to the Paper Size box to select one of the paper sizes.

2 Type over the word with a new name.

3 Specify a unit in the Measurement Unit box.

4 Edit the values of Size and Margins shown in the selected measurement unit to match the paper size you want to define.

Note:
- Once you have finished making the required changes, click the OK button. Your new paper size will be saved. The new paper size will appear in the “Paper Size” of the Main dialog.

② Removing paper sizes

You can also delete Paper Sizes from the Paper Size box. This is useful if you only have very few Paper Sizes in use and you want to avoid having all pre-defined Paper Sizes listed in the applications listbox, or you want to delete previously defined Paper Sizes.

1 Select the Paper Size you want to delete in the Paper Size box.

2 Click **Delete**.

③ Restore the pre-defined Paper Sizes

If you want to restore the pre-defined (default) Paper Sizes, click on the **Restore** button.

Important:
- Restoring the Paper Sizes overwrites previously user-defined Paper Sizes.

④ Size

Edit the size of your paper (enter actual size of the paper).

⑤ Margins

Edit the margins of your paper.

Note:
- The unit has hardware margins, in which it cannot print. If you enter a value for a margin which is below the hardware margin, the Editbox defaults to the minimum hardware margin.

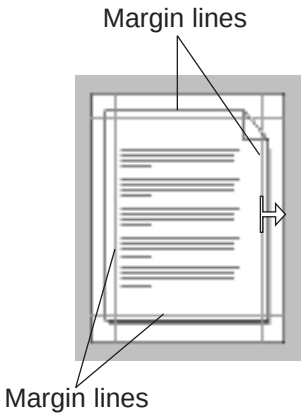
⑥ Measurement Unit

Select from Inch, cm, Pixel, Pica, Point.

⑦ Preview Display

This displays the effective printable height and width of a paper size and shows the aspect ration of the paper dimensions.
This display also allows you to set the margin of the document.

1. Align the arrow with the margin lines.
2. Click and hold the left side of the mouse.
3. Adjust the margin to the desired size by moving the mouse.
4. Release the clicker.



Printer driver information

By pressing the “About...” tab, a dialog box will appear showing information on;
—Windows version,
—Driver version,
—Subsystem version,
—Creation date, etc.

Please keep this information ready if you call the hotline.

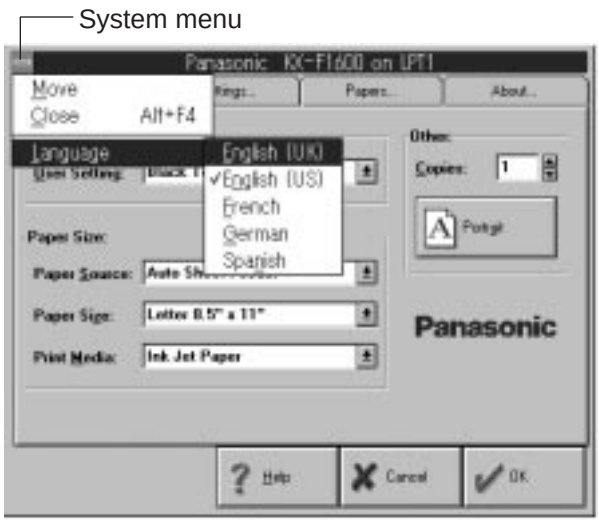
Changing the default dialog language

The driver dialogs, messages and its helpfiles are in four languages: English (US and UK), French, German and Spanish.
At installation time the installer program detects the country setting and sets the drivers default dialog language.
The language can be changed in the driver by changing to another setting.

To change the dialog language, proceed as follows.

For Windows 3.1 or 3.11

1. Click on the system menu of the driver dialog box, then click **Language**.
2. Click the language you wish to use.



For Windows 95

1. Click on the title bar of the driver dialog box, then click **Language**.
2. Click the language you wish to use.

Removing the printer driver

To remove the printer driver, proceed as follows.

For Windows 3.1 or 3.11

1. From the Windows Program Manager, double-click on the **Control Panel** icon.
2. From the Windows Control Panel, double-click on the Printers icon to display the Printers dialog box.
3. Click your printer in the Installed Printers box.
4. Click **Remove** and click **YES**.

For Windows 95

1. Click **Start**, move the pointer to **Settings** and click **Printers**.
   - The Printers dialog box will appear.
2. Click your printer icon.
3. Click **Delete** from the **File** menu and click **YES**.

Selecting a printer driver with MS-DOS applications

The installation programs for most applications offer a list of printer drivers from which to choose. If you find Panasonic KX-F1600 on the list, select it. This will give you the fullest range of features.

If you do not find KX-F1600 on the list, you can select a printer that will have nearly the same operating capabilities.

To use the printer in Epson LQ mode, select one of the following printers. (in order of priority)

■ **For color printing:**

1. Canon BJC-4000 (LQ)
2. Canon BJC-600 (LQ)
3. Canon BJC-800/820
4. Epson LQ-2550
5. Epson LQ-2500

■ **For black printing:**

1. Canon BJC-4000 (LQ)
2. Canon BJ-200e (LQ)
3. Canon BJ-200 (LQ)
4. Canon BJ-230 (LQ)
5. Canon BJ-20 (LQ)
6. Canon BJ-10ex (LQ)
7. Epson LQ-510
8. Epson LQ-850
9. Epson LQ-500
10. Epson LQ-Printer

To use the printer in BJ mode, select one of the following printers. (in order of priority)

1. Canon BJC-4000 (X24E)
2. Canon BJ-200e (X24E)
3. Canon BJ-200 (X24E)
4. Canon BJ-230 (X24E)
5. Canon BJ-20/BJ-10e/BJ-10ex (X24E)
6. IBM Proprinter X24E/XL24E
7. IBM Proprinter X24/XL24
8. Canon BJ-130e
9. IBM Proprinter

Selecting a printer emulation mode

Your unit has two resident printer emulation modes: Epson LQ mode and BJ mode. Epson LQ mode is the default.

Epson LQ mode: Emulates the Epson LQ-2550 printer.
This mode is available for monochrome and color printing.

BJ mode: Emulates the IBM proprinter X24E.
This mode is available for monochrome printing only.

Typefaces and print styles in each emulation mode

The following table lists the typefaces and pitches that are available in each emulation mode.

Typeface	Emulation mode	
	Epson LQ mode	BJ mode
Prestige	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS	12 cpi in HQ mode only
Courier	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS	10 cpi, 12 cpi*, 17 cpi, PS**
Sans Serif	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS	Not available
Draft (available in HS mode only)	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS	Not available
Roman	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS	Not available
Script	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS	Not available
Orator	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS	Not available
Orator-S	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, PS	Not available

* In BJ mode, Courier at 12 cpi is available in HS mode only.
** In BJ mode, Proportional spacing is not available in HS mode.

The following table lists the print styles that are available in each emulation mode.

Print style	Emulation mode	
	Epson LQ mode	BJ mode
Italic	Yes	No
Emphasized	Yes (via ESC E sequence)	Yes (via ESC E sequence)
Double-high	Yes (via ESC w sequence)	Yes (via ESC [@ sequence)
Double-wide	Yes (via ESC W sequence)	Yes (via ESC W sequence)
Slashed zero	No	Yes (via ESC [K sequence)

Setting the printer emulation

Follow this procedure to set the printer emulation. You can select either Epson LQ or BJ emulation. The factory preset setting is LQ emulation.

1 Make sure the printer mode is turned off.

2 Press **MENU** until the following is displayed.

```
PRINTER SET UP
```

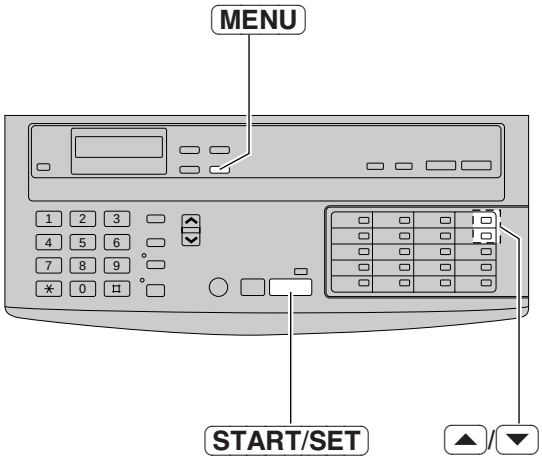
3 Press **START/SET**.

```
EMU.MODE=LQ[▲▼]
```

4 Press ▲ or ▼ to select LQ or BJ.

5 Press **START/SET**.

6 Press **MENU**.



Customizing settings in each emulation mode

Each emulation mode has a number of settings that you can modify to fit your own particular needs when printing documents from your computer. For example, you can change the paper size setting, printer character sets, typefaces, etc.

Settings	Emulation mode	
	Epson LQ mode	BJ mode
TEXT SCALE SET	**Disable/**Enable	**Disable**/Enable
PAGE LENGTH		**11″** (letter-size)/12″ (A4-size)
CHARACTER SETTING	**Italic Character Set**/ Graphic Character Set	**Character set 1**/ Character set 2
INTERNATIONAL CHARACTER SET	**USA**/UK/Germany/France/ Denmark/Sweden/Italy/Spain	
CODE PAGE SET		**437**, 850, 860, 863, 865
TYPEFACE SETTING	**Roman**/Sans serif/Draft/ Courier/Prestige/Script/Orator/ Orator-S	
AUTO CR		**LF** (line feed)/LF and CR (carriage return)
AGM MODE SET		**Disable**/Enable
DOWNLOAD BUFFER SIZE		**0KB**/40KB
AUTO EMULATION SWITCH	**Disable**/Enable	**Disable**/Enable
SMOOTHING	Disable/**Enable**	Disable/**Enable**

Note: Bold face indicates the factory preset setting.

Changing settings for LQ emulation

The following list shows the settings you can customize and explains each one.

TEXT SCALE SET: You can select the number of lines (62 or 66 lines) that can fit on a piece of paper. If the software application you are using assumes that each piece of paper equals 66 lines, select ENABLE. For other applications, select DISABLE.

CHARACTER SETTING: You can choose from Italic Character Set and Graphic Character Set. The setting you choose depends on the characters you want to print. For more details on character sets, see page 42.

INT'L CHARACTER SET: You can choose from eight different language sets: USA, UK, Germany, France, Denmark, Sweden, Italy, and Spain.

TYPEFACE SETTING: You can choose from eight different typefaces: Roman, Sans serif, Draft, Courier, Prestige, Script, Orator and Orator-S.

AUTO EMULATION SWITCH: When Enable is selected, the unit can switch to the BJ mode when BJ mode is detected.

SMOOTHING: When Enable is selected, the unit can refine your printout at 720 (horizontal) by 360 (vertical) dots per inch by smoothing jagged edges. The smoothing mode is used with the black print cartridge only.

Follow this procedure to customize the unit when using LQ emulation.

1 Press **MENU** until the following is displayed.

```
PRINTER SET UP
```

2 Press **START/SET**.

```
EMU.MODE=LQ[▲▼]
```

3 Press ▲ or ▼ to select LQ emulation.

```
EMU.MODE=LQ[▲▼]
```

4 Press **START/SET**.

```
PRESS[▲▼]&[SET]
```

5 Press ▲ or ▼ until the desired function is displayed.

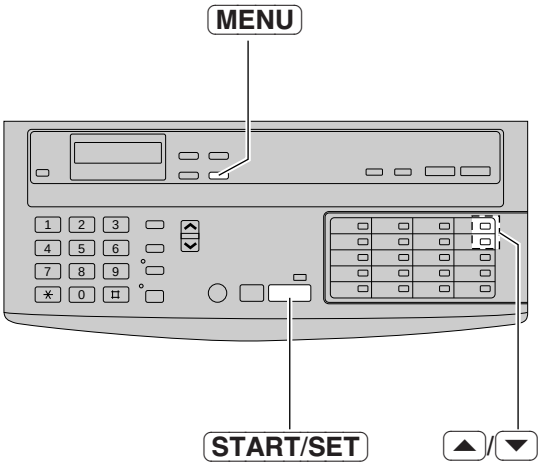
6 Press **START/SET**.

7 Press ▲ or ▼ to select the desired setting.

8 Press **START/SET** to store the setting.

- To set other items, repeat steps 5 through 8.

9 Press **MENU**.



Changing settings for BJ emulation

The following list shows the printer settings you can customize and explains each one.

TEXT SCALE SET: You can select the number of lines (62 or 66 lines) that can fit on a piece of paper. If the software application you are using assumes that each piece of paper equals 66 lines, select ENABLE. For other applications, select DISABLE.

PAGE LENGTH: You can select a page length of either 11″ (letter-size) or 12″ (A4-size).

CHARACTER SETTING: You can choose from Character Set 1 and Character Set 2. The setting you choose depends on the characters you want to print. For details, see page 44.

CODE PAGE SET: You can select the code page from 437, 850, 860, 863 and 865. Each code page has two different character sets. The setting you choose depends on the type of characters you want to print and the operating system of your computer. For details, see page 44.

AUTO CR: You can select whether or not you want the unit to perform a carriage return after each line feed.

AGM MODE SET: You can set the unit to accept high-resolution, 24-dot, all-points-addressable (APA) graphics commands, similar to those used with conventional 24-pin printers. Select ENABLE for printing documents containing graphics. Select DISABLE for text-only documents.

DOWNLOAD BUFFER SIZE: Select 40KB if you use downloadable fonts (i.e., fonts not resident in the unit, but fonts that you download from your computer). Select 0KB if you don't use downloadable fonts. This will leave the entire 64KB of space available for data.

AUTO EMULATION SWITCH: When Enable is selected, the unit can switch to the LQ mode when Epson LQ mode is detected.

SMOOTHING: When Enable is selected, the unit can refine your printout at 720 (horizontal) by 360 (vertical) dots per inch by smoothing jagged edges. The smoothing mode is used with the Black Print Cartridge only.

Follow this procedure to customize the unit when using BJ emulation.

1 Press **MENU** until the following is displayed.

```
PRINTER SET UP
```

2 Press **START/SET**.

```
EMU.MODE=LQ[▲▼]
```

3 Press ▲ or ▼ to select BJ emulation.

```
EMU.MODE=BJ[▲▼]
```

4 Press **START/SET**.

```
PRESS[▲▼]&[SET]
```

5 Press ▲ or ▼ until the desired function is displayed.

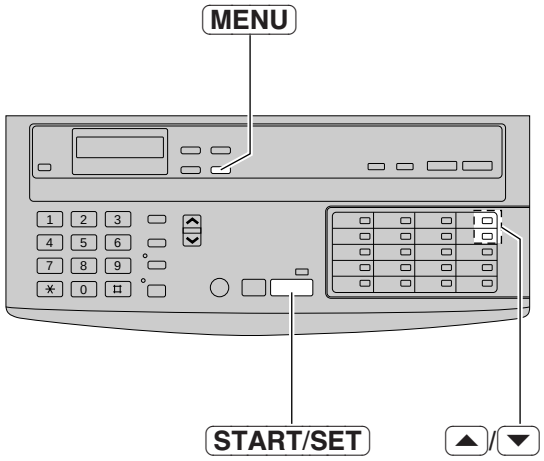
6 Press **START/SET**.

7 Press ▲ or ▼ to select the desired setting.

8 Press **START/SET** to store the setting.

- To set other items, repeat steps 5 through 8.

9 Press **MENU**.



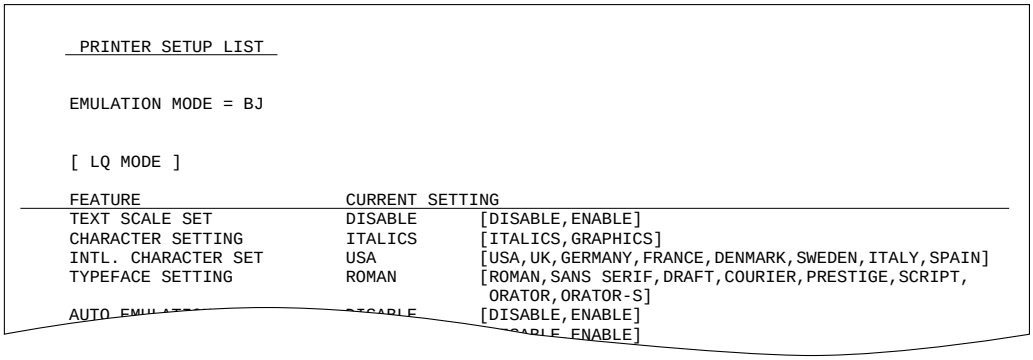
Printing a printer setup list and a printer test list

You can obtain the following lists.

Printer setup list—provides you with the current settings in each emulation mode.

Printer test list—provides all characters in the emulation mode you set. All characters are printed out in the various print styles and pitches available.

Sample of the printer setup list



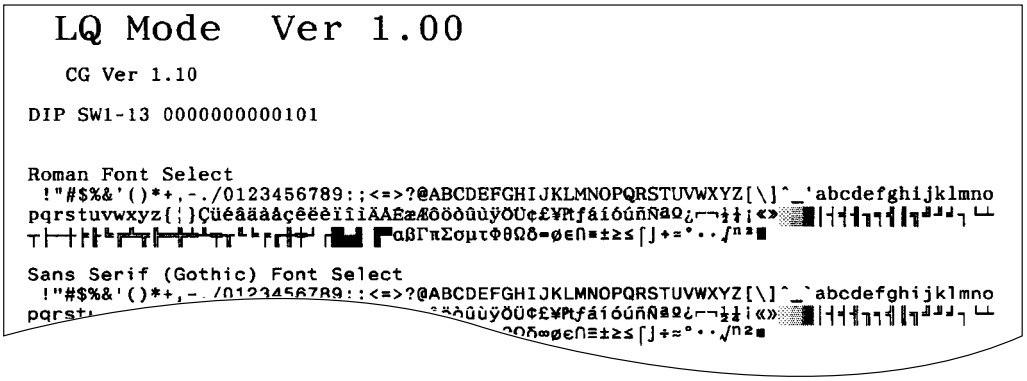
PRINTER SETUP LIST

EMULATION MODE = BJ

[LQ MODE]

FEATURE	CURRENT SETTING	
TEXT SCALE SET	DISABLE	[DISABLE,ENABLE]
CHARACTER SETTING	ITALICS	[ITALICS,GRAPHICS]
INTL. CHARACTER SET	USA	[USA,UK,GERMANY,FRANCE,DENMARK,SWEDEN,ITALY,SPAIN]
TYPEFACE SETTING	ROMAN	[ROMAN,SANS SERIF,DRAFT,COURIER,PRESTIGE,SCRIPT, ORATOR,ORATOR-S]
AUTO EMULATION	DISABLE	[DISABLE,ENABLE]

Sample of the printer test list



LQ Mode Ver 1.00

CG Ver 1.10

DIP SW1-13 0000000000101

Roman Font Select

!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_'abcdefghijklmno

pqrstuvwxyz{|}

Sans Serif (Gothic) Font Select

!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno

- The contents of the printer test list may vary slightly from the actual one.

To print lists, proceed as follows:

1 Make sure the printer mode is turned off.

2 Press **MENU** until the following is displayed.

```
PRINT LIST
```

3 For the printer test list, press #, then 5.

```
PRINTER TEST
```

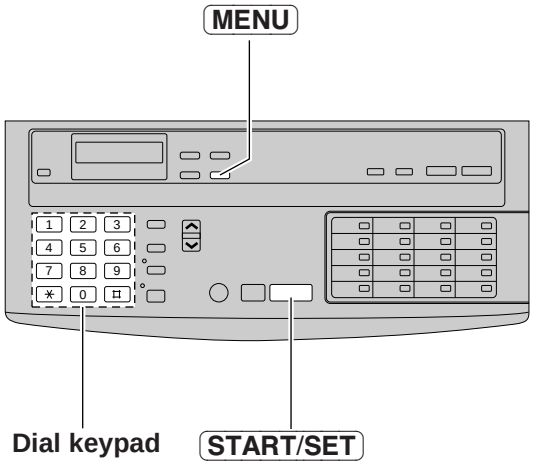
For the printer setup list, press #, then 8.

```
PRT. SETUP LIST
```

4 Press **START/SET** to start printing.

```
   PRINTING
```

5 After printing, press **MENU**.



Selecting print quality

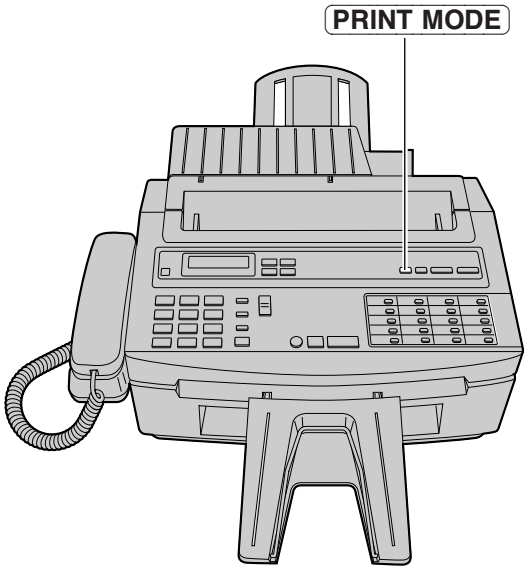
If you are not using Windows, you may need to set the print mode for MS-DOS applications.
Your unit incorporates several print modes that allow you to select print quality, density of ink, and paper type. The control panel enables you to select three of these print modes: HQ, FINE, and HS.

If you are using Windows, the printer driver automatically adjusts the print mode.

To select the print mode, follow the steps below.

1 Make sure the printer mode is turned on and the unit is off-line.

2 Press **PRINT MODE** repeatedly until the desired print mode is displayed.



`PRINT MODE=HQ`

Use this mode for most of your printing needs. The unit automatically prints in HQ mode unless you change the mode with the PRINT MODE button or your software.

`PRINT MODE=FINE`

Use this mode for printing on ink jet transparencies or printing halftone images that produce grayscale or intermediate colors.

`PRINT MODE=HS`

Use this mode when you are printing draft documents. Your document will print faster but the print density will be lower. This mode uses half the amount of ink as the HQ mode.

Command summaries in each emulation mode

You use software to send information and instructions to the unit over the cable that connects the unit to the computer. In addition to data, the instructions you send may include special command sequences known as control codes and ESCape sequences. These commands tell the unit such things as how many lines to skip and where to start printing.

Some control codes are standard throughout the microcomputer industry and are recognized by all printers. Two examples of these are form feed (FF) and line feed (LF).

ESCape sequences are unique to each printer emulation. ESCape sequences begin with the ESC character followed by one or more other characters.

The ESCape character tells the unit not to print the next character, but to use the information to perform a printing control task, such as printing in bold or underlining.

Application printer drivers may override the printer control codes embedded in a document. To determine if an application is overriding your commands, print the document using a generic driver and see if the correct commands are reflected in the printed copy. If they are, the application printer driver is overriding the commands.

Epson LQ mode command summaries

You can use the control codes and ESCape sequences listed in the following table.

Note:

- Because of hardware differences, the justification code, ESC a, and the perforation skip codes, ESC M and ESC N, are not supported. Also, the styles of block graphics characters at 12 cpi are different from normal Epson LQ-510 printing.

Basic control codes (Epson LQ)

Function	ASCII	Decimal	Hexadecimal
Backspace one character	BS	8	08
Horizontal tab control; move to next tab	HT	9	09
Perform line feed	LF	10	0A
Vertical tab control; move to next tab	VT	11	0B
Perform form feed	FF	12	0C
Perform carriage return	CR	13	0D
Set double-wide mode by line	SO	14	0E
Set condensed mode	SI	15	0F
Select printer	DC1	17	11
Cancel condensed mode	DC2	18	12
Deselect printer	DC3	19	13
Cancel double-wide mode	DC4	20	14
Cancel data	CAN	24	18
Delete character	DEL	127	7F

ESCape sequence codes (Epson LQ)

Function	ASCII	Decimal	Hexadecimal
Control automatic sheet feeder (you cannot disable the sheet feeder); n=R (Eject paper)	ESC EM n	27 25 n	1B 19 n
Set n/180-inch inter-character space; n=0 to 127	ESC SP n	27 32 n	1B 20 n
Select various print modes (Master Select)	ESC ! n	27 33 n	1B 21
Cancel most significant bit (MSB) control	ESC #	27 35	1B 23
Set absolute print position	ESC $ n1 n2	27 36 n1 n2	1B 24 n1 n2
Select download character set	ESC % n	27 37 n	1B 25 n
Define downloaded characters	ESC &	27 38	1B 26
Select score mode	ESC (–	27 40 45	1B 28 20
Select image graphics mode	ESC *	27 42	1B 2A
Set line spacing increments of n/360-inch per line; n=0 to 255	ESC + n	27 43 n	1B 2B n
Set/cancel underscore mode; n=0 (Start underscore), 1 (End underscore)	ESC – n	27 45 n	1B 2D n

Function	ASCII	Decimal	Hexadecimal
Select vertical tab channel	ESC /	27 47	1B 2F
Set 1/8-inch line spacing (8 lpi)	ESC 0	27 48	1B 30
Set 1/6-inch line spacing (6 lpi)	ESC 2	27 50	1B 32
Set n/180-inch line spacing; n=0 to 255	ESC 3 n	27 51 n	1B 33 n
Set italic mode	ESC 4	27 52	1B 34
Cancel italic mode	ESC 5	27 53	1B 35
Expand printable range	ESC 6	27 54	1B 36
Cancel printable range expansion	ESC 7	27 55	1B 37
Copy ROM font to RAM	ESC :	27 58	1B 3A
Set most significant bit (MSB) to 0	ESC =	27 61	1B 3D
Set most significant bit (MSB) to 1	ESC >	27 62	1B 3E
Reassign image graphics mode	ESC ?	27 63	1B 3F
Reset printer settings to the default values	ESC @	27 64	1B 40
Set n/60-inch line spacing; n=0 to 127	ESC A n	27 65 n	1B 41 n
Set vertical tabs; n1...n16=line numbers for tab stops	ESC B n1...n16	27 66 n1...n16	1B 42 n1...n16
Set page length in lines; n=1 to 127	ESC C n	27 67 n	1B 43 n
Set page length in inches; n=1 to 17	ESC C NUL n	27 67 0n	1B 43 00 n
Set horizontal tabs; n1...n32=columns for tab stops	ESC D n1...n32	27 68 n1...n32	1B 44 n1...n32
Set emphasized mode (printing in twice the normal dot density)	ESC E	27 69	1B 45
Cancel emphasized mode	ESC F	27 70	1B 46
Set double-strike mode	ESC G	27 71	1B 47
Cancel double-strike mode	ESC H	27 72	1B 48
Perform n/180-inch line feed; n=0 to 255	ESC J n	27 74 n	1B 4A n
Set single-density graphics mode	ESC K	27 75	1B 4B
Set double-density graphics mode	ESC L	27 76	1B 4C
Set 12 cpi mode	ESC M	27 77	1B 4D
Set 10 cpi mode	ESC P	27 80	1B 50
Set right margin; n=right margin position in characters	ESC Q n	27 81 n	1B 51 n
Select international character set; n=country code	ESC R n	27 82 n	1B 52 n
Set super/subscript mode; n=0 (Select superscript mode), 1 (Select subscript mode)	ESC S n	27 83 n	1B 53 n
Cancel super/subscript mode	ESC T	27 84	1B 54
Set/cancel double-wide mode; n=0 (Cancel double-wide mode), 1 (Start double-wide mode)	ESC W n	27 87 n	1B 57 n
Set double-density image graphics mode	ESC Y	27 89	1B 59
Set quadruple-density image graphics mode	ESC Z	27 90	1B 5A

Function	ASCII	Decimal	Hexadecimal
Set relative print position	ESC \	27 92	1B 5C
Set vertical tabs in channels	ESC b	27 98	1B 62
Set 15 cpi mode	ESC g	27 103	1B 67
Select typeface; n=type face	ESC k n	27 107 n	1B 6B n
Set left margin; n=left margin position in characters	ESC l n	27 108 n	1B 6C n
Set/cancel proportional space mode; n=0 (Cancel proportional space mode), 1 (Start proportional space mode)	ESC p n	27 112 n	1B 70 n
Select character style; n=character style	ESC q n	27 113 n	1B 71 n
Select color; n=color	ESC r n	27 114 n	1B 72 n
Select character set; n=character code table	ESC t n	27 116 n	1B 74 n
Set/cancel double-high mode; n=0 (Cancel double-high mode), 1 (Start double-high mode)	ESC w n	27 119 n	1B 77 n
Set/cancel draft font mode; n=0 (Set draft font printing), 1 (Cancel draft font printing)	ESC x n	27 120 n	1B 78 n

BJ mode command summaries

Use the control codes listed in the following tables when the unit is set for BJ emulation.

Note:

- Because of hardware differences, the reverse feed code (ESC]) and the printer deselect code (DC3) are not supported. Also, the styles of block graphics characters at 12 cpi are different from normal IBM Proprinter X24E printing.

Basic control codes (BJ)

Function	ASCII	Decimal	Hexadecimal
Backspace one character	BS	8	08
Horizontal tab control; move to next tab	HT	9	09
Perform line feed	LF	10	0A
Vertical tab control; move to next tab	VT	11	0B
Perform form feed	FF	12	0C
Perform carriage return	CR	13	0D
Set double-wide mode by line	SO	14	0E
Set condensed mode (17 cpi)	SI	15	0F
Select printer	DC1	17	11
Set 10 cpi mode	DC2	18	12
Cancel double-wide mode	DC4	20	14
Cancel data	CAN	24	18

ESCape Sequence Codes (BJ)

Function	ASCII	Decimal	Hexadecimal
Select image graphics mode	ESC *	27 42	1B 2A
Set/cancel underscore mode; n=0 (End underscore), 1 (Start underscore)	ESC – n	27 45 n	1B 2D n
Set 1/8-inch line spacing (8 lpi)	ESC 0	27 48	1B 30
Set 7/72-inch line spacing (7/72 inch per line)	ESC 1	27 49	1B 31
Enable line spacing set by ESC A	ESC 2	27 50	1B 32
Set graphics line spacing in n/216-inch increments; n=0 to 255	ESC 3 n	27 51 n	1B 33 n
Set top of form	ESC 4	27 52	1B 34
Set/cancel automatic LF; n=0 (CR), 1 (CR+LF)	ESC 5 n	27 53 n	1B 35 n
Select Character Set 2	ESC 6	27 54	1B 36
Select Character Set 1	ESC 7	27 55	1B 37
Set 12-cpi prestige mode	ESC :	27 58	1B 3A
Download font image	ESC =	27 61	1B 3D
Set text line spacing to n/72 inch per line; n=0 to 127	ESC A n	27 65 n	1B 41 n
Set vertical tabs; n1...n64=line numbers for tab stops	ESC B n1...n64	27 66 n1...n64	1B 42 n1...n64
Set page length in lines; n=1 to 127	ESC C n	27 67 n	1B 43 n
Set page length in inches; n=1 to 17	ESC C NUL n	27 67 0 n	1B 43 00 n
Set horizontal tabs; n1...n28=columns for tab stops	ESC D n1...n28	27 68 n1...n28	1B 44 n1...n28
Set emphasized mode to start printing in twice the normal dot density	ESC E	27 69	1B 45
Cancel emphasized mode set by ESC E	ESC F	27 70	1B 46
Set double-strike mode	ESC G	27 71	1B 47
Cancel double-strike mode set by ESC G	ESC H	27 72	1B 48
Select font style; n=font style	ESC I n	27 73 n	1B 49 n
Perform graphics line spacing; n=0 to 255	ESC J n	27 74 n	1B 4A n
Set normal-density image graphics	ESC K	27 75	1B 4B
Set double-density image graphics	ESC L	27 76	1B 4C
Set perforation skip; n=1 to 127 lines	ESC N n	27 78 n	1B 4E n
Cancel skip over perforation	ESC O	27 79	1B 4F
Set/cancel proportional spacing mode; n=0 (End proportional spacing), 1 (Start proportional spacing)	ESC P n	27 80 n	1B 50 n
Deselect printer; n=Printer ID	ESC Q n	27 81 n	1B 51 n
Set all tabs to power-on setting	ESC R	27 82	1B 52
Set super/subscript mode; n=0 (Select superscript mode), 1 (Select subscript mode)	ESC S n	27 83 n	1B 53 n

Function	ASCII	Decimal	Hexadecimal
Cancel super/subscript mode set by ESC S	ESC T	27 84	1B 54
Set/cancel double-wide mode; n=0 (Cancel double-wide mode), 1 (Start double-wide mode)	ESC W n	27 87 n	1B 57 n
Set horizontal margins; n=right margin in characters, m=left margin in characters	ESC X n m	27 88 n m	1B 58 n m
Set double-density image graphics mode	ESC Y	27 89	1B 59
Set quadruple-density image graphics mode	ESC Z	27 90	1B 5A
Set presentation highlight	ESC [@	27 91 64	1B 5B 40
Select global font	ESC [I	27 91 73	1B 5B 49
Set initial condition	ESC [K	27 91 75	1B 5B 4B
Set code page	ESC [T	27 91 84	1B 5B 54
Change graphics line spacing	ESC [\	27 91 92	1B 5B 5C
Select high resolution graphics mode	ESC [g	27 91 103	1B 5B 67
Select color	ESC [M	27 91 77	1B 5B 4D
Set/cancel overscore mode; n=0 (Cancel overscore mode), 1 (Set overscore mode)	ESC _ n	27 95 n	1B 5F n
Relative move in-line forward	ESC d	27 100	1B 64
Set printer off-line	ESC j	27 106	1B 6A

FS sequence (BJ)

Function	ASCII	Decimal	Hexadecimal
Set high resolution graphics mode	FS C B	28 67 66	1C 43 42
Set/perform graphics line spacing	FS C J	28 67 74	1C 43 4A

Character sets in each emulation mode

Epson LQ Character Set

Italic Character Set

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	' 96	p 112	NUL 128	144	SP 160	*0* 176	*@* 192	*P* 208	´ 224	*p* 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	DC1 145	*!* 161	*1* 177	*A* 193	*Q* 209	*a* 225	*q* 241	0001
2	2	DC2 18	” 34	2 50	B 66	R 82	b 98	r 114	130	DC2 146	*”* 162	*2* 178	*B* 194	*R* 210	*b* 226	*r* 242	0010
3	3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	131	DC3 147	*#* 163	*3* 179	*C* 195	*S* 211	*c* 227	*s* 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	DC4 148	*$* 164	*4* 180	*D* 196	*T* 212	*d* 228	*t* 244	0100
5	5	21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	*%* 165	*5* 181	*E* 197	*U* 213	*e* 229	*u* 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	*&* 166	*6* 182	*F* 198	*V* 214	*f* 230	*v* 246	0110
7	7	23	’ 39	7 55	G 71	W 87	g 103	w 119	135	151	*’* 167	*7* 183	*G* 199	*W* 215	*g* 231	*w* 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	BS 136	CAN 152	*(* 168	*8* 184	*H* 200	*X* 216	*h* 232	*x* 248	1000
9	HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	HT 137	EM 153	*)* 169	*9* 185	*I* 201	*Y* 217	*i* 233	*y* 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	LF 138	154	*** 170	*:* 186	*J* 202	*Z* 218	*j* 234	*z* 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	VT 139	ESC 155	*+* 171	*;* 187	*K* 203	*[* 219	*k* 235	*{* 251	1011
C	FF 12	28	, 44	< 60	L 76	\ 92	l 108	| 124	FF 140	156	*,* 172	*<* 188	*L* 204	** 220	*l* 236	*/* 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	CR 141	157	*–* 173	*=* 189	*M* 205	*]* 221	*m* 237	*}* 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	SO 142	158	*.* 174	*>* 190	*N* 206	*^* 222	*n* 238	*~* 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	DEL 127	SI 143	159	*/* 175	*?* 191	*O* 207	*_* 223	*o* 239	255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Note: The characters in the shaded areas change according to the selected international character set.

Graphic Character Set

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	┴ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	β 225	± 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	■ 178	┬ 194	╥ 210	Γ 226	≥ 242	0010
3	3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244	0100
5	5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	a 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246	0110
7	7	23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	o 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	. 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	¢ 155	½ 171	╗ 187	╦ 203	■ 219	δ 235	√ 251	1011
C	FF 12	28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	Ø 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	Pt 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	▪ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	DEL 127	Å 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Note: The characters in the shaded areas change according to the selected international character set.

International Character Set

Use the table below to replace the characters marked by the shaded areas in the Epson Italics and Graphic character sets.

Country \ Hex / Dec		23 35	24 36	40 64	5B 91	5C 92	5D 93	5E 94	60 96	7B 123	7C 124	7D 125	7E 126	A3 163	A4 164	C0 192	DB 219	DC 220	DD 221	DE 222	E0 224	FB 251	FC 252	FD 253	FE 254
0	U.S.A	#	$	@	[	\	]	^	`	{	|	}	~	#	$	@	[	\	]	^	`	{	/	}	~
1	France	#	$	à	°	ç	§	^	`	é	ù	è	¨	#	$	à	°	ç	§	^	`	é	ù	è	¨
2	Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
3	U.K.	£	$	@	[	\	]	^	`	{	|	}	~	£	$	@	[	\	]	^	`	{	/	}	~
4	Denmark	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
5	Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	Italy	#	$	@	°	\	é	^	ù	à	ò	è	Ì	#	$	@	°	\	é	^	ù	à	ò	è	Ì
7	Spain	Pt	$	@	¡	Ñ	¿	^	`	"	ñ	}	~	Pt	$	@	¡	Ñ	¿	^	`	"	ñ	}	~
8	Japan	#	$	@	[	¥	]	^	`	{	|	}	~	#	$	@	[	¥	]	^	`	{	/	}	~
9	Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10	Denmark	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11	Spain	#	$	á	¡	Ñ	¿	é	`	í	ñ	ó	ú	#	$	á	¡	Ñ	¿	é	`	í	ñ	ó	ú
12	Latin America	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
13	Korea	#	$	@	[	₩	]	^	`	{	|	}	~	#	$	@	[	₩	]	^	`	{	/	}	~
64	Legal	#	$	§	°	'	"	¶	`	©	®	†	™	#	$	§	°	′	″	¶	`	©	®	†	™

BJ Character Set

In BJ mode, the unit supports five IBM code pages: Code Page 437, Code Page 850, Code Page 860, Code Page 863, and Code Page 865. Each of the five code pages has two character sets: Set 1 and Set 2.

Character Set 1 has control codes in two places: one between ASCII 0 and ASCII 32 and the other between ASCII 128 and ASCII 159. Character Set 2 has control codes only between ASCII 0 and 32. All other ASCII characters are printable.

Note:

- A control code is an unprintable character that the unit uses for printer operations such as line spacing or carriage return.

Code Page 437—Character Set 1

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	NUL 128	144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	DC1 145	í 161	▓ 177	┴ 193	╤ 209	β 225	± 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	DC2 146	ó 162	■ 178	┬ 194	╥ 210	Γ 226	≥ 242	0010
3	3	19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	DC4 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244	0100
5	5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	a 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246	0110
7	7	23	' 39	7 55	G 71	W 87	g 103	w 119	135	151	o 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	BS 136	CAN 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	HT 137	153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	LF 138	154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	VT 139	ESC 155	½ 171	╗ 187	╦ 203	■ 219	δ 235	√ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	FF 140	FS 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	CR 141	157	¡ 173	╜ 189	═ 205	▌ 221	✔ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	SO 142	158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	▪ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	SI 143	159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Code Page 437—Character Set 2

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	β 225	± 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	■ 178	┬ 194	╥ 210	Γ 226	≥ 242	0010
3	♥ 3	19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243	0011
4	◆ 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244	0100
5	♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	♠ 6	22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	a 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246	0110
7	7	23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	o 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	¢ 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	✔ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	Pts 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	Å 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Code Page 850—Character Set 1

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	NUL 128	144	á 160	▒ 176	└ 192	ð 208	Ó 224	– 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	DC1 145	í 161	▓ 177	┴ 193	Đ 209	ß 225	± 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	DC2 146	ó 162	■ 178	┬ 194	Ê 210	Ô 226	= 242	0010
3	3	19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	DC4 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244	0100
5	5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	a 166	Â 182	ã 198	í 214	µ 230	÷ 246	0110
7	7	23	' 39	7 55	G 71	W 87	g 103	w 119	135	151	o 167	À 183	Ã 199	î 215	þ 231	¸ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	BS 136	CAN 152	¿ 168	© 184	╚ 200	ï 216	Þ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	HT 137	153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	LF 138	154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	VT 139	ESC 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	¹ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	FF 140	156	¼ 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	CR 141	157	¡ 173	¥ 189	═ 205	¦ 221	Ý 237	² 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	SO 142	158	« 174	190	╬ 206	ì 222	¯ 238	■ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	SI 143	159	» 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Code Page 850—Character Set 2

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	– 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▓ 177	┴ 193	Đ 209	ß 225	± 241	0001
2	2	DC2 18	” 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	■ 178	┬ 194	Ê 210	Ô 226	= 242	0010
3	❤ 3	19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	| 179	├ 195	Ë 211	Ò 227	¾ 243	0011
4	◆ 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244	0100
5	♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245	0101
6	♠ 6	22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	a 166	Â 182	ã 198	Ì 214	µ 230	÷ 246	0110
7	7	23	’ 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	o 167	À 183	Ã 199	Î 215	þ 231	¸ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	‖ 186	╩ 202	┌ 218	Û 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	Ù 235	¹ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	ì 141	Ø 157	¡ 173	✔ 189	═ 205	¦ 221	Ý 237	² 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	× 158	« 174	¥ 190	╬ 206	ì 222	¯ 238	▮ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	Å 143	ƒ 159	» 175	¬ 191	¤ 207	▀ 223	´ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Code Page 860—Character Set 1

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	NUL 128	144	á 160	▒ 176	└ 192	┴ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	DC1 145	í 161	▓ 177	┴ 193	╤ 209	β 225	± 241	0001
2	2	DC2 18	” 34	2 50	B 66	R 82	b 98	r 114	130	DC2 146	ó 162	■ 178	┬ 194	╥ 210	Γ 226	≥ 242	0010
3	3	19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	ú 163	| 179	├ 195	╙ 211	π 227	≤ 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	DC4 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244	0100
5	5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	a 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246	0110
7	7	23	’ 39	7 55	G 71	W 87	g 103	w 119	135	151	o 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	BS 136	CAN 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	HT 137	153	Ò 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	LF 138	154	¬ 170	‖ 186	╩ 202	┌ 218	Ω 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	VT 139	ESC 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	FF 140	FS 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	CR 141	157	¡ 173	╜ 189	═ 205	▌ 221	✔ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	SO 142	158	« 174	╛ 190	╬ 206	▌ 222	∈ 238	▮ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	SI 143	159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Code Page 860—Character Set 2

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	À 145	í 161	▓ 177	┴ 193	╤ 209	β 225	± 241	0001
2	2	DC2 18	” 34	2 50	B 66	R 82	b 98	r 114	é 130	È 146	ó 162	■ 178	┬ 194	╥ 210	Γ 226	≥ 242	0010
3	❤ 3	19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243	0011
4	◆ 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	ã 132	õ 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244	0100
5	♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	♠ 6	22	& 38	6 54	F 70	V 86	f 102	v 118	Á 134	Ú 150	a 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246	0110
7	7	23	’ 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	o 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ì 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	Ê 137	Õ 153	Ò 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	Í 139	✔ 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	Ô 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	ì 141	Ù 157	¡ 173	╜ 189	═ 205	▌ 221	✔ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ã 142	Pts 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	▪ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	Â 143	Ó 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Code Page 863—Character Set 1

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	NUL 128	144	| 160	▒ 176	└ 192	╨ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	DC1 145	´ 161	▓ 177	┴ 193	╤ 209	β 225	± 241	0001
2	2	DC2 18	” 34	2 50	B 66	R 82	b 98	r 114	130	DC2 146	ó 162	■ 178	┬ 194	╥ 210	Γ 226	≥ 242	0010
3	3	19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	DC4 148	¨ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244	0100
5	5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	¸ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	x 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246	0110
7	7	23	’ 39	7 55	G 71	W 87	g 103	w 119	135	151	¯ 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	BS 136	CAN 152	Î 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	HT 137	153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	LF 138	154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	VT 139	ESC 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	FF 140	FS 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	CR 141	157	¾ 173	╜ 189	═ 205	▌ 221	✔ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	SO 142	158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	▪ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	SI 143	159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Code Page 863—Character Set 2

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	| 160	▒ 176	└ 192	┴ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	È 145	´ 161	▓ 177	┴ 193	┬ 209	β 225	± 241	0001
2	2	DC2 18	” 34	2 50	B 66	R 82	b 98	r 114	é 130	Ê 146	ó 162	■ 178	┬ 194	├ 210	Γ 226	≥ 242	0010
3	❤ 3	19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	| 179	├ 195	╚ 211	π 227	≤ 243	0011
4	◆ 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	Â 132	Ë 148	¨ 164	┤ 180	─ 196	╔ 212	Σ 228	⌠ 244	0100
5	♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	Ï 149	¸ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	♠ 6	22	& 38	6 54	F 70	V 86	f 102	v 118	¶ 134	û 150	x 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246	0110
7	7	23	’ 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	¯ 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	¤ 152	Î 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ô 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	. 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	¢ 154	½ 171	╗ 187	╦ 203	■ 219	δ 235	√ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	= 141	Ù 157	¾ 173	╜ 189	═ 205	▌ 221	✔ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	À 142	Û 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	§ 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Code Page 865—Character Set 1

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	NUL 128	144	á 160	▒ 176	└ 192	┴ 208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	DC1 145	í 161	▓ 177	┴ 193	┬ 209	β 225	± 241	0001
2	2	DC2 18	” 34	2 50	B 66	R 82	b 98	r 114	130	DC2 146	ó 162	■ 178	┬ 194	├ 210	Γ 226	≥ 242	0010
3	3	19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	ú 163	| 179	├ 195	╚ 211	π 227	≤ 243	0011
4	4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	DC4 148	ñ 164	┤ 180	─ 196	╔ 212	Σ 228	⌠ 244	0100
5	5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245	0101
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	a 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246	0110
7	7	23	’ 39	7 55	G 71	W 87	g 103	w 119	135	151	o 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	BS 136	CAN 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	HT 137	153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	LF 138	154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	. 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	VT 139	ESC 155	½ 171	╗ 187	╦ 203	■ 219	δ 235	√ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	FF 140	FS 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	CR 141	157	¡ 173	╜ 189	═ 205	▌ 221	✔ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	SO 142	158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	SI 143	159	¤ 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Code Page 865—Character Set 2

Hex No.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
0	NUL 0	16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	176	192	208	α 224	≡ 240	0000
1	1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	177	193	209	β 225	± 241	0001
2	2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	178	194	210	Γ 226	≥ 242	0010
3	❤ 3	19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	179	195	211	π 227	≤ 243	0011
4	◆ 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	180	196	212	Σ 228	⌠ 244	0100
5	♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	181	197	213	σ 229	⌡ 245	0101
6	♠ 6	22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	a 166	182	198	214	µ 230	÷ 246	0110
7	7	23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	o 167	183	199	215	τ 231	≈ 247	0111
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	184	200	216	Φ 232	° 248	1000
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	169	185	201	217	Θ 233	• 249	1001
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	170	186	202	218	Ω 234	. 250	1010
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	ø 155	½ 171	187	203	219	δ 235	√ 251	1011
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	188	204	220	∞ 236	n 252	1100
D	CR 13	29	– 45	= 61	M 77	] 93	m 109	} 125	ì 141	Ø 157	¡ 173	189	205	221	✔ 237	2 253	1101
E	SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	Pts 158	« 174	190	206	222	∈ 238	254	1110
F	SI 15	31	/ 47	? 63	O 79	_ 95	o 111	127	Å 143	ƒ 159	¤ 175	191	207	223	∩ 239	SP 255	1111
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	Binary No.

Error messages on the display

If the unit detects a problem, one of the following messages will appear on the display.

ERROR MESSAGE	CAUSE & REMEDY
ADD PAPER	●While printing, the unit ran out of recording paper. Install paper, and then press the START/SET button.
CHECK CARTRIDGE	●The unit cannot control the cartridge or temperature sensor on the unit is abnormal. Leave the unit for approx. 15 minutes and then press the START/SET button.
CHECK COVER	●The front lid is open. Close it.
CHECK DOCUMENT	●The document is not fed into the unit properly. Reinsert the document and try again. If misfeeding occurs frequently, clean the feeder rollers. If the problem remains, adjust the feeder pressure. See the operating instructions for fax.
CHECK MEMORY	●Memory (phone numbers, parameters, etc.) has been erased. Re-program.
INK EMPTY	●The print cartridge ran out of ink during fax reception. Replace the cartridge.
INSTALL INK	●The print cartridge is not installed properly. Install it correctly.
MEMORY FULL	●When transmitting a document from memory, the document to be stored exceeds the memory capacity of the unit. Turn off the memory transmission feature or transmit the entire document manually. ●The memory is full of received documents that have been stored in memory due to a lack of recording paper, a recording paper jam or receiving in the printer mode. Install paper or clear the jammed paper.
NO RESPONSE	●The receiving unit was busy or ran out of recording paper. Try again.
OVERHEATED	●The temperature sensor in the print head of the print cartridge exceeds the prescribed level or is abnormal. Leave the unit for approx. 15 minutes and press the START/SET button.
PAPER JAMMED	●A recording paper jam occurred. Remove the jammed paper.
PLEASE WAIT	●The front lid is opened or closed, the printer mode is turned on or off, or a printer error is reset. Wait for a while.
POLLING ERROR	●The other fax machine does not provide the polling function. Check the other party.
PRINTER ERROR	●Printer error occurred. Leave the unit for approx. 15 minutes and then press the START/SET button to resume operation.
REMOVE DOCUMENT	●The document is jammed. Remove the jammed document. ●Attempted to transmit a document longer than 600 mm (23⅝″). Press the STOP button and remove the document. Divide it into two or more sheets and try again.
TRANSMIT ERROR	●Transmission error occurred. Try again.
WAITING PRINT	●When the unit is in the printer mode, the fax documents sent by the other party are stored in memory. To print them, turn the printer mode off.

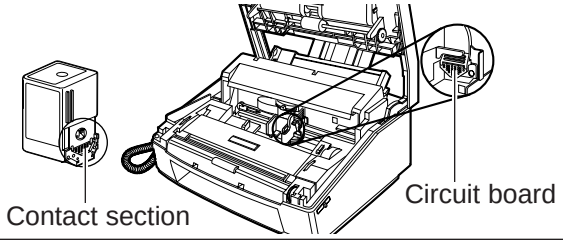
Before requesting help

PROBLEM	CAUSE & REMEDY
The unit does not print.	●The power cord or interface cable is not connected. Check the connection. ●The printer mode is turned off. Press **PRINTER** to turn the printer mode on. ●The unit is not on-line (the ON LINE light is off). Press **ON LINE**. ●The interface cable is not connected or the incorrect interface cable is used. Confirm the connection and the interface cable (see page 6). ●Recording paper is not loaded properly. Reload. ●The computer is not set up correctly. Confirm the computer. ●The print cartridge is not installed properly or runs out of ink. Install properly or replace.
The unit automatically turns off the printer mode even though the connected computer is turned on.	●This may be caused by the parallel cable due to different connecting specifications. In this case, set the printer time-out function to off (see page 56 in the operating instructions for a fax) or try a bi-directional parallel cable.

Paper loading problems

PROBLEM	CAUSE & REMEDY
Paper does not load into the unit.	●The paper selection lever is not set to the correct position. Set to the correct position. ●When manually feeding paper, the unit is not on-line or the paper is not inserted correctly. Press **ON LINE** or reload the paper.
Multiple sheets feed into the unit.	●The paper is sticking together. Fan the paper, then reload. ●The paper selection lever is not set to the back position. Set lever. ●Too much paper is loaded in the sheet feeder. Remove some sheets of paper. ●Different paper types are loaded in the sheet feeder. Load only one paper type.
Paper is loaded skewed. (Printing is skewed.)	●The paper is not loaded properly. Reload.
Envelopes are not loaded.	●The paper selection lever is not set to the front. Set lever. ●The envelopes are not loaded properly. Reload. ●In your printer driver or your software application or on the unit's control panel, envelope mode is not set up. Set up envelope mode.
Paper is not ejected after printing.	●To eject the paper, press **ON LINE** to set the unit off-line, then press and hold **FF** for one second.
Paper is ejected but any images are not printed.	●The unit fed paper slightly when the paper was loaded. Do not load paper deeply into the unit.

Print quality problems

PROBLEM	CAUSE & REMEDY
The print quality is poor.	●Printing on the wrong side of the paper. Turn the paper over.
Characters and images are blurred.	●Wrong type of paper is used. Use the correct kind of paper. ●You are printing in the wrong print area. Print in the correct print area.
Printed images on the transparencies are blurred.	●The printing area was touched before printing. Always hold the film by its edges to prevent the printing area from being spoiled by your fingerprints. ●The printed sides were touched before completely dried. Do not touch the films for approx. 15 minutes after printing.
The reverse side of the printed page has smudges.	●Ink is on the unit's platen. Clean the platen by feeding a few sheets of paper through the unit.
White streaks or missing dots appear on printed pages.	●Print head is clogged. Clean the print head at least five times (see page 58). If output is not satisfactory, clean the contact section of the print cartridge and the circuit board of the unit with a soft dry cloth as shown below. If it still doesn't work, replace the print cartridge (see page 55). 
You are not satisfied with the printout of graphics or characters from your MS-DOS application.	●The PRINT MODE on the unit is not set properly. Change the PRINT MODE.
The paper edges are smeared.	●You printed outside of the recommended printing area (see page 60). Check the print size option of the printer driver. Also check the margins of the document you are printing.

Color printing problems

PROBLEM	CAUSE & REMEDY
The unit prints only in black.	●The black cartridge is installed. Install the color cartridge. ●You did not select colors through your application. Select colors. ●You did not select the proper printer driver. Select the KX-F1600 printer driver or the LQ-2550 printer driver. ●You did not select Color when you set up the Windows printer driver. Select Color.
Colors are missing.	●The print head is clogged. Clean the head (see page 58).
Printing is slow in color mode.	●When you are using Windows, the "Print Manager" is turned on. Turn off the "Print Manager".

(Continued)

PROBLEM	CAUSE & REMEDY
Selected colors do not appear on the output.	●An ink cartridge may have run out of ink. Clean the print head at least five times (see page 58). If the output is still unsatisfactory, replace the ink cartridge with a new one (see page 57).

Problems with Windows applications

PROBLEM	CAUSE & REMEDY
Overall printing is slow.	●When using windows, the “Print Manager” is turned on. Turn off the “Print Manager”. ●In the Windows driver or your software application, print options are changed. Set all print options to their defaults.
The unit does not print or prints garbage.	●The power cord or interface cord is not connected. Check the connection. ●The printer driver is not installed properly. Reinstall it.
“Stalled print jobs in Printer Manager” is displayed.	●Delete print jobs under the KX-F1600 in Print Manager, then try your print operation again.
“Remove Fast Printing Direct to Print” is displayed.	●Disable “Fast Printing Direct to Port” in Printer dialog box, then try your print operation again.
You cannot print from file menu.	●The Panasonic KX-F1600 is not selected as the default printer in Printer dialog box. Select the Panasonic KX-F1600.
Output is not as expected.	●You did not select the Panasonic KX-F1600 setting in the Printers dialog box or from the printer setting for your particular application. Select the Panasonic KX-F1600.
Fonts do not print as smoothly rounded characters.	●An outline font manager is not installed or a True Type font is not chosen. Install an outline font or choose a True Type font.
You cannot print a file sent from remote computer.	●Software is not correctly configured for the network environment. Confirm all software.
Colors do not print in WordPerfect 5.2 for Windows.	●Fast Graphics Printing is selected in the Preferences dialog box. Remove it.
Large gaps appear between text or graphics.	●The video driver is not VGA. Change the video driver.
Extra characters appear on the page.	●Disable the “Use Print Manager” in Control Panel. ●Change the “value in Device Time-outs” from 15 to 30 seconds and the “value in Transmission Retry” from 45 to 90 seconds in the Control Panel. ●A valid SET TEMP statement is not met in your AUTOEXEC.BAT. Confirm your AUTOEXEC.BAT.
Printout does not match paper size.	●The paper size you selected within your printer driver does not match the paper loaded in the unit. Check the loaded paper size.

Problems with non-Windows applications

PROBLEM	CAUSE & REMEDY
Overall printing is slow.	●The smoothing mode is enabled. Set SMOOTHING to DISABLE in the MENU function. ●The download buffer size is too small in BJ mode. Set the DOWNLOAD BUFFER SIZE to 40KB in MENU function. ●The unit automatically goes into protection mode and slows down in order to cool the print head. Stop your print operation and wait several minutes to let the head cool. Then start your print operation again.
Printout is wrong.	●You selected the incorrect EMULATION MODE in the MENU function. Check the EMULATION MODE.
Printed characters do not match characters on the screen.	●You selected the incorrect CHARACTER SETTING in the MENU function of the unit. Check the CHARACTER SETTING.
The unit is not using the font you selected in the MENU function.	●Your software is overriding your selection in the MENU function. See your application's document.
The unit prints incorrect number of lines on a page.	●In the BJ mode, you selected the incorrect "PAGE LENGTH" in the MENU function. Check the "PAGE LENGTH". ●The software setting for top margin and page length is incorrect. Check the top margin setting and page length. ●Paper is not loaded correctly. Reload. ●You need to print 66 lines per page. Set the "TEXT SCALE SET" to Enable in the MENU function.

Other printing problems

PROBLEM	CAUSE & REMEDY
The unit is printing beyond the edge of the page.	●Paper is not loaded in the sheet feeder correctly. Reload. ●The software setting for the right margin is incorrect. Check the right margin setting.
Computer indicates a device time-out.	●The power cord or interface cable is not connected. Check the connection. ●The unit is off-line. Press **ON LINE** to set the unit on-line. ●Paper is not loaded in the sheet feeder. Check the paper.
Transparencies or back print films stick after printed out.	●The films are stacked before drying completely. When automatically feeding films, remove each sheet after it is delivered. Do not allow film sheets to stack up in the paper stacker. When storing the films, cover its printed side with a sheet of plain paper (except coated paper).

Replacing the print and ink cartridge

Replace the print cartridge when:
—you have been using the cartridge for over one year,
—the printing is not crisp and there are gaps in the characters (missing dots) even after you have cleaned the print head at least five times,
—you want to switch from high-speed monochrome printing to color printing (or vice versa),
—the KX-FA150 black print cartridge runs out of ink, or
—the print head of the KX-FA151 color print cartridge is damaged (or after printing approximately 2,000 pages).

If you are using the KX-FA151 color print cartridge and your output is blank, one of the ink cartridges is probably out of ink. Replace an ink cartridge. See page 57.

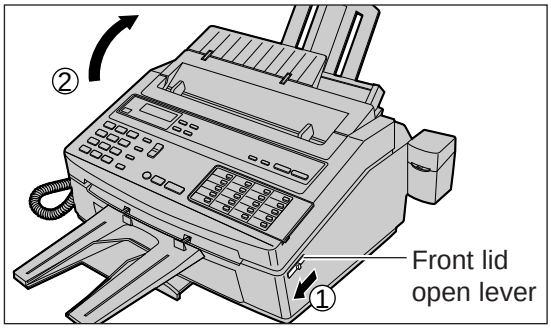
Note:
- Refer to the operating instructions for fax on the print cartridge guideline.

Replacing the print cartridge

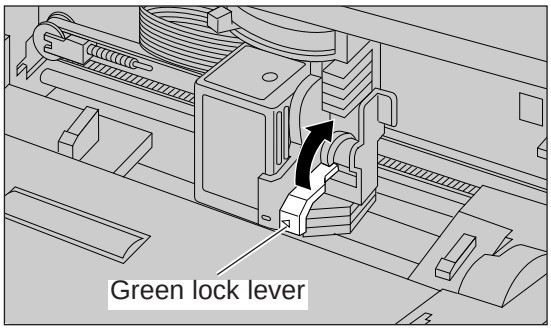
1 Make sure the unit is turned on.

2 Slide the front lid open lever towards you to open the front lid.

- The unit will beep and the cartridge holder will move to the center. Do not touch the cartridge holder.
- If the cartridge holder does not move to the center, the cartridge may be overheated. Close the lid and leave it to cool down.

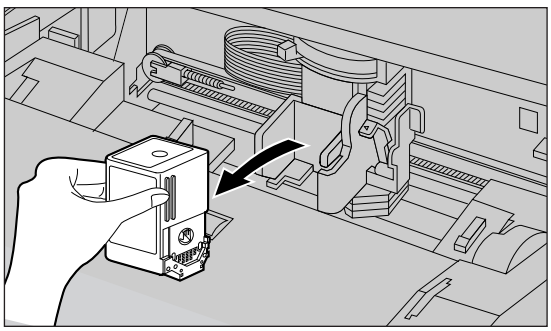


3 Lift the green lock lever on the cartridge holder.



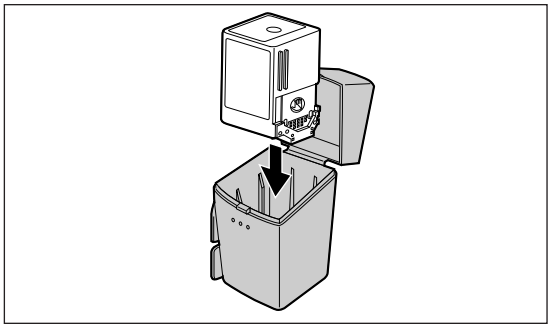
4 Slide the print cartridge out of the holder.

- Hold the print cartridge on the sides only. Do not touch the silver metal plate on the cartridge near the print head. This plate may become very hot during printing.



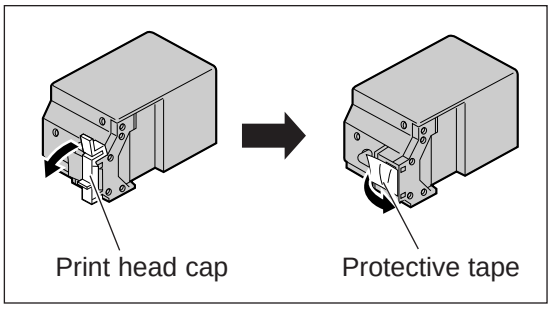
5 Store or dispose of the print cartridge.

- If you are switching cartridges, store the cartridge you are removing in the cartridge container.



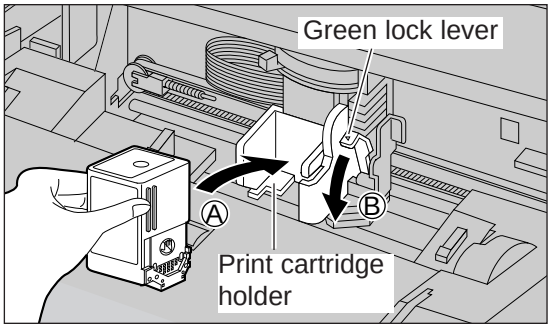
6 Unwrap the new print cartridge and remove the print head cap and the protective tape.

Caution:
- Do not use the removed print head cap and protective tape again, or the recorded image may be distorted.



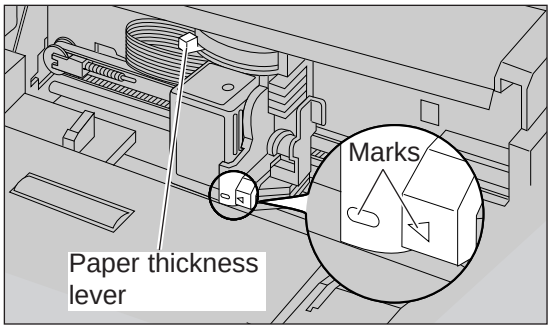
7 Slide the print cartridge straight into the cartridge holder (Ⓐ) and press the green lock lever down completely (Ⓑ).

- Be careful not to touch the rollers with the print head.
- Make sure the cartridge is pressed against the back of the holder.

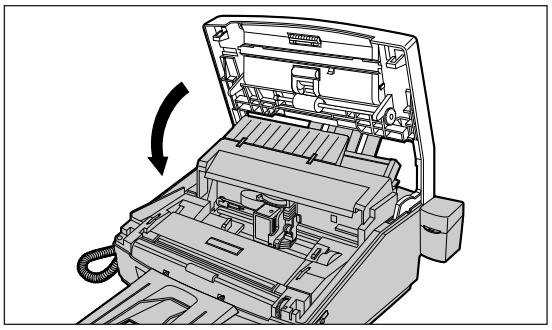


8 Make sure the marks on the lever and the cartridge holder align and set the paper thickness lever.
- If you installed a KX-FA150 print cartridge, set the lever to the left.
  If you installed a KX-FA151 color print cartridge, set the lever to the center.

Caution:
- Do not move the mechanism that houses the print cartridge. Attempting to move the print cartridge holder will damage the unit.



9 Close the lid securely by pushing down on both sides.



Note:
- Whenever the unit is idle, the print cartridge holder is in the home position on the right and caps the print cartridge. If you unplug the unit while it is printing, or if you move the cartridge from the home position, the cartridge will not be capped and may dry out.

Replacing an ink cartridge in the KX-FA151 color print cartridge

Replace the ink cartridge when:
—you have been using the ink cartridge for over six months, or
—the output is still blank after cleaning the print head at least five times though you properly perform a print operation using the KX-FA151 color print cartridge.

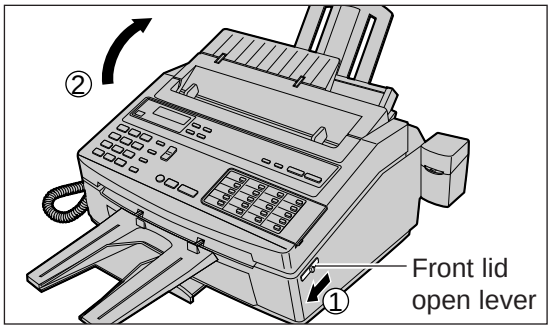
Ink cartridges that can be used are;
—KX-FA152 color ink cartridge
—KX-FA153 black ink cartridge

Important:
- You can only replace an ink cartridge when the color print cartridge is installed in the unit. Do not remove the print cartridge before replacing an ink cartridge.

1 Make sure the unit is turned on.

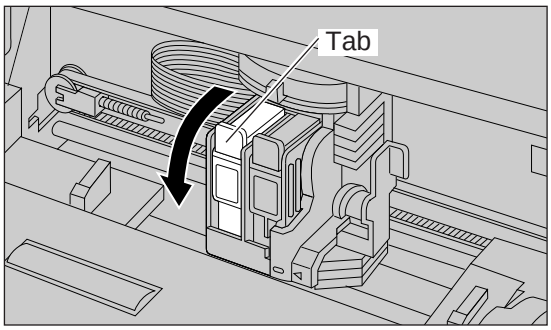
2 Slide the front lid open lever towards you to open the front lid.

- The unit will make a beep and the cartridge holder will move to the center. Do not touch the cartridge holder.
- If the cartridge holder does not move to the center, the cartridge may be overheated. Close the lid and leave it to cool down.

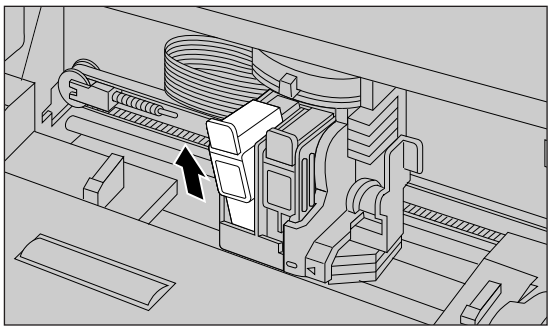


3 Remove the empty ink cartridge by grasping the tab on the top of the cartridge and pulling forward to release the ink cartridge.

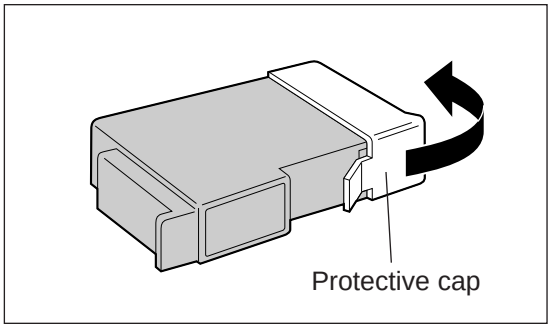
- The color ink cartridge is on the left, the black ink cartridge is on the right.



4 Lift the ink cartridge up and out of the print cartridge unit.



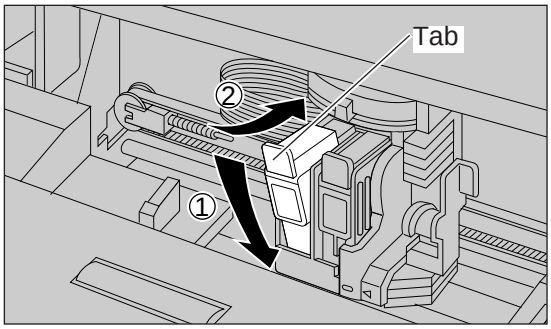
5 Unwrap the new ink cartridge and remove the protective cap.



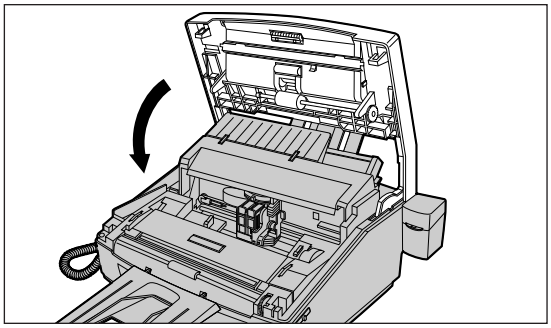
6 Install the new ink cartridge by
① Sliding it into the empty slot on the print cartridge, and
② Pressing firmly on the tab on the top of the ink cartridge until the cartridge snaps into place.

- Make sure each ink cartridge is in its proper slot; the color ink cartridge (KX-FA152) on the left and the black ink cartridge (KX-FA153) on the right.

Caution:
- Do not move the mechanism that houses the print cartridge. Attempting to move the print cartridge holder will damage the unit.



7 Close the lid securely by pushing down on both sides.



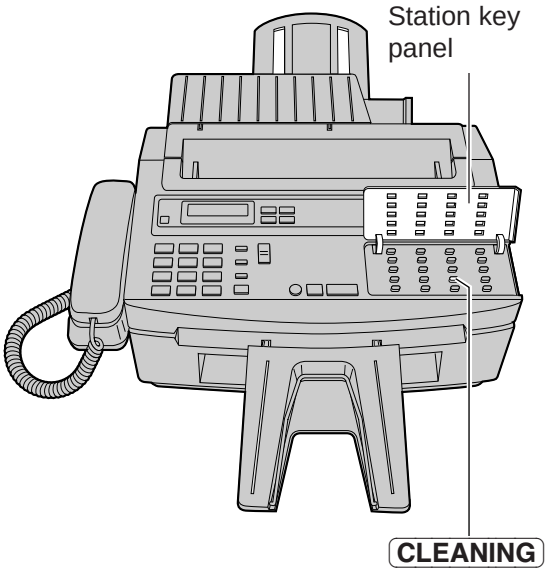
Cleaning the print head

The unit is equipped with a print head cleaning function to ensure consistent high quality printing.

1 Make sure the unit is turned on.

2 Open the station key panel and press **CLEANING** until a beep tone is heard.

- If the unit is in the printer mode, the ON LINE light will flash for several seconds while the print head is being cleaned.
- After cleaning, a beep tone is heard.



Note:
- Perform the head cleaning only when there is a print quality problem. Unnecessary and repetitious head cleaning will waste ink.
- If you execute the head cleaning while paper is manually loaded, the unit will eject the paper and then perform the head cleaning.

Paper specifications

Paper Size:
Letter (8.5″×11″)
Legal (8.5″×14″)
A4 (210 mm×297 mm)
U.S. Commercial number 10 envelope (9.5″×4.1″)
Envelope DL (220 mm×110 mm)

Paper Type:
Ink jet paper (Canon Bubble Jet Paper LC-301 for BJC-4100 is recommended.)
Color ink jet paper (Canon Coated Paper LC-101 for BJC-4100 is recommended.)
Plain paper (Xerox 4024 is recommended.)
Ink jet glossy paper (Canon Glossy Paper GP-101 for BJC-4100 is recommended.)
Ink jet transparency film (Canon Transparencies CF-102 for BJC-4100 are recommended.)
Resume paper (Canon Fabric Sheets FS-101 for BJC-4100 are recommended.)
Ink jet back print film (Canon Back Print Film BF-102 for BJC-4100 is recommended.)
Envelope (Commercial number 10 or Envelope DL)

Paper Weight:
17 to 24 lb (64 to 90 g/m^2) with automatic feed
17 to 28 lb (64 to 105 g/m^2) with manual feed

Printer specifications

Printing Method:
Ink Jet

Paper Handling:
Automatic feed
Manual feed

Sheet Feeder Capacity:
Maximum thickness of stacked paper: 0.39″ (10 mm)

Ink jet paper:	Approximately 100 sheets (20 lbs or 75 g/m^2)
Ink jet transparencies	40 sheets
Ink jet back print film	40 sheets
Envelopes	15 envelopes (Envelope DL)

Print Speed:
KX-FA150 print cartridge; black ink only

HQ mode	346 cps at 10 cpi
HS mode	496 cps at 10 cpi

KX-FA151 color print cartridge; color ink
Approximately 0.3 to 0.8 ppm (Print speed depends on content of print data)
KX-FA151 color print cartridge; black ink only

HQ mode	173 cps at 10 cpi
HS mode	248 cps at 10 cpi

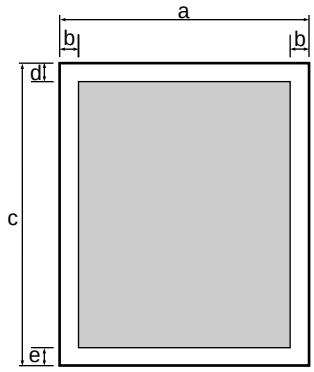
Print Width:
Maximum 8 inches

Line Feed Speed:
Approximately 50 ms per line at 1/6″ line

Printing Direction:

Monochrome	Bidirectional in text (both MS-DOS and Windows) Unidirectional in Block Graphic Character Unidirectional in image
Color	Unidirectional

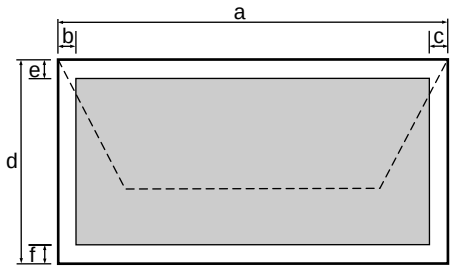
Printing Area—Papers: The shaded portion in the following figure shows the printing area for papers.



Recommended Printing Area:
Letter size a=8.5″, b=0.25″, c=11.0″, d=0.83″, e=0.81″
Legal size a=8.5″, b=0.25″, c=14.0″, d=0.83″, e=0.81″
A4 size a=210 mm, b=3.4 mm, c=297 mm, d=21 mm, e=20.5 mm

Possible Printing Area:
Letter size a=8.5″, b=0.25″, c=11.0″, d=0.12″, e=0.3″
Legal size a=8.5″, b=0.25″, c=14.0″, d=0.12″, e=0.3″
A4 size a=210 mm, b=3.4 mm, c=297 mm, d=3 mm, e=7.6 mm

Printing Area—Envelopes: The shaded portion in the following figure shows the printing area for an envelope.



Recommended Printing Area:

Commercial number 10 a=9.5″, b=0.83″, c=0.81″, d=4.1″, e=0.25″, f=0.25″

Envelope DL a=220 mm, b=6.4 mm, c=10.4 mm, d=110 mm, e=21 mm, f=20.5 mm

Possible Printing Area:

Commercial number 10 a=9.5″, b=0.12″, c=0.3″, d=4.1″, e=0.25″, f=0.25″

Envelope DL a=220 mm, b=6.4 mm, c=10.4 mm, d=110 mm, e=3 mm f=7.6 mm

Note:
- When you print outside of the recommended printing area, the edge of the print media may be smeared. The possible printing area differs depending on the printer driver you use.

Resident Printer Control Modes:

Epson LQ mode	Epson LQ-2550 emulation
BJ mode	IBM Proprinter X24E emulation

Line Feed Pitch:

Epson LQ mode	1/6″, 1/8″, n/180″, and n/360″ (n: programmable)
BJ mode	1/6″, 1/8″, n/60″, n/72″, n/180″, n/216″, and n/360″

Printing Characters:

Typeface	Epson LQ mode—Roman, Sans Serif, Courier, Prestige, Script, Orator, Orator-S, and Draft BJ mode—Prestige and Courier
Pitch	Epson LQ mode—10, 12, 15, 17, 20 cpi, and PS BJ mode—10, 12, 17 cpi, and PS
Cell Composition	36 (h)×48 (v) dot matrix in HQ mode 18 out of 36 (h)×48 (v) dot matrix in HS mode
Character Set	Epson LQ mode—Italic character set and Graphics character set BJ mode—IBM Character Sets 1 and 2 (Code Pages 437, 850, 860, 863, and 865)

Maximum Number of Characters per Line:

Epson LQ mode:

Mode	Pitch	Characters per line
10 cpi	10 cpi	80 cpl
10 cpi doublewide	5 cpi	40 cpl
10 cpi condensed	17 cpi	136 cpl
10 cpi condensed-doublewide	8.5 cpi	68 cpl
12 cpi	12 cpi	96 cpl
12 cpi doublewide	6 cpi	48 cpl
12 cpi condensed	20 cpi	160 cpl
12 cpi condensed-doublewide	10 cpi	80 cpl
15 cpi	15 cpi	120 cpl
15 cpi doublewide	7.5 cpi	60 cpl
Proportional spacing	PS	Varies

BJ mode:

Mode	Pitch	Characters per line
10 cpi	10 cpi	80 cpl
10 cpi doublewide	5 cpi	40 cpl
10 cpi condensed	17 cpi	136 cpl
10 cpi condensed-doublewide	8.5 cpi	68 cpl
12 cpi	12 cpi	96 cpl
12 cpi doublewide	6 cpi	48 cpl
Proportional spacing	PS	Varies

Graphic Image Print:	Data Format	Vertical 8, 24, and/or 48-dot format	
	Resolution	Horizontal 60, 120, 180, 240, 360, 720 dpi (in smoothing mode only)	
Buffer:	Epson LQ mode:	Input buffer	32 KB
		Download buffer	40KB
	BJ mode:	Input buffer	64 KB (or 31 KB)
		Download buffer	0 KB (or 41 KB)
Interface:	8-bit parallel		
KX-FA150 Print Cartridge:	Print head	128 nozzles	
	Ink color	Black	
	Contents	Isopropyl alcohol 67-63-0 Glycerine 56-81-5 Ethylene glycol 107-21-1	
KX-FA151 Color Print Cartridge:	Print head	64 nozzles for black 24 nozzles for each color (cyan, magenta, yellow)	
	Ink Cartridges	KX-FA152 Color (cyan, yellow, magenta) KX-FA153 (Black)	
	Ink color	Black, cyan, yellow, magenta	
	Contents/Black	Isopropyl alcohol 67-63-0 Glycerine 56-81-5 Ethylene glycol 107-21-1	
	Contents/Color	Glycerine 56-81-5	
Acoustic Noise Level Per ISO 9296:	Approx. 45 dB(A) (Printing)		
Operating Environment:	Temperature	5–35°C (41–95°F)	
	Humidity	20–80% RH	
Power Supply:	120 V AC, 60 Hz (The unit will not function at 50 Hz.)		
Power Consumption:	Standby:	Approx. 4 W	
	Print:	Approx. 20 W	

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